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"ENGLAND'S DICTATORSHIP."

TWO of the New York dailies, belonging to the type of journalism usually classed as "sensational," devoted much space in their issues of September 21 to what they chose to call the British seizure of the American rubber trade. They quoted at length—as live news—the articles of agreement entered into last January between the British government and the rubber manufacturers of the United States, which were set forth in detail in the February issue of THE INDIA RUBBER WORLD. This belated and extensive exploitation of the conditions which have governed rubber imports from British ports during the last eight months was occasioned by the protest of the German Embassy at Washington to the State Department concerning the control, or at least partial control, which England holds over various raw materials, including rubber, needed by the American manufacturer.

One of these dailies stated that an investigation was being urged to learn "if civil or criminal action should not be brought under the Sherman Act to end Great Britain's complete control of the rubber trade of the United States."

Just what civil or criminal action could be brought, and against whom or what, it would be highly interesting to learn. If the English choose so to guard their rubber as not to let it be used to aid their enemies they certainly appear well within their rights; and if American manufacturers want British rubber so much that they are willing to subscribe to the conditions laid down—the conditions *per se* involving no impropriety—they are surely justified in their course.

The other journal which gave so much space to this subject made this statement in conspicuous headlines: "Rubber Club as agent for Empire dictates terms to manufacturers." Nothing could be farther from the facts. The Rubber Club is not the agent of the British Empire nor has it dictated to any manufacturer or to anyone else.

When, last November, the embargo was placed on rubber shipments from British ports it was obvious to everyone that the American trade was confronted with a situation bound to be embarrassing and liable to prove extremely serious. It was evident that something had to be done and done at once. The most representative organization in the trade is the Rubber Club, and its officers, at great sacrifice of time, and fully appreciative of the burden they assumed, took up the task of finding the best and quickest means of securing for our manufacturers their normal and necessary supplies, and as a result of their efforts the embargo was removed. The instant relief to the rubber trade and the freedom from further vexation which it has since enjoyed is the best proof of the excellence of their work.

How necessary it was to comply with the terms of the British government, not only for the good of the trade but for the general welfare of the public, is shown by the import figures of crude rubber during the present year. Since the first of February, when the embargo was lifted, to the first of August, the crude rubber importations at the port of New York amounted to 11,364 tons from Brazil and 25,000 tons from London, all of this excepting 128 tons being plantation rubber. In other words, over two-thirds of our supply of crude rubber during the last eight months has come from London, none of which would ever have reached an American port except through compliance with the conditions laid down by the British government.

If no such agreement had been made and no rubber received by American manufacturers except the very inadequate supply coming from Brazil, the price of crude rubber would undoubtedly have remained at the high figure reached in the early days of the war, and might even have gone to the two-dollar mark, as has been the case in those European neutral countries which refused to comply with British conditions. In that event the price of rubber goods to the consumer would inevitably have mounted with great rapidity, and those journals which now decry "England's control of the American

rubber trade" would have fulminated against the iniquities of the rubber robbers.

WHAT A MOUNTAIN OF SCRAP THE WAR IS MAKING!

WHAT a plethora of scrap rubber there will be one of these days when the war is over!

For the year ending June, 1914, the total imports of scrap rubber in the United States amounted to nearly 26,000,000 pounds, nearly 20,000,000 of which came from Europe. For the year ending last June, eleven months of which were included in the war period, the total imports of scrap rubber amounted to only 11,000,000 pounds. The Department of Commerce has not yet published its report giving the individual sources of this supply, but the figures have been compiled, and they show that the receipts from Europe for the last fiscal year amounted to only 4,286,195 pounds; hardly more than one-fifth of the amount received the year before and less than one-eighth of the volume received from that source in the year ending June, 1913.

Naturally the Germans are sending us no scrap rubber, though they have unearthed every piece of it in the Empire and doubtless have a larger accumulation than ever before. The neutral countries of Europe are also conserving every piece of rubber obtainable, and even in England and France, where new rubber is in fair abundance, there would, of course, be no disposition to export any considerable quantity of old rubber, which it might be a great convenience to have a little later.

More rubber is now on its way to the scrap heap than ever before in the history of the industry. This is an automobile war. For the first time in the history of military operations the motor car is the chief mobilizer. Troops, supplies, equipment, aeroplanes—all move on motor vehicles. At the beginning of the war, or soon afterwards, Germany, according to the best estimates obtainable, had 70,000 motor vehicles in military service; while the Allies doubtless had three times that number. Even assuming, as is often stated, that military auto-trucks last only a month (in all probability they last much longer) the Allies, or at least England and France, must greatly have increased their number of auto vehicles during the last twelve months. The English factories alone have been producing seven or eight hundred motor vehicles a day and their importations from the United States since the war began exceed 50,000. And there is no other rubber product that reaches the scrap heap so quickly as a tire on an auto in service at the front.

So, all in all, between the universal destruction of rubber goods in Europe and the lack of incentive for the present for collecting these rubber remains for the American reclaimer—as shown by the meager receipts at our ports—the accumulation of rubber scrap on the Continent must be enormous, and the amount available for reclamation after the cessation of hostilities without precedent.

THE OPTIMISM OF THE AMAZON.

OPTIMISM is half the battle. In fact, to observe mathematical accuracy, it is probably two-thirds. Consequently it is pleasant to read in the letter which appears on a later page in this issue, from a man long identified with the rubber interests at Para that, no matter what the plantation people do, the Amazon will always be able to hold its own. His cheerful prophecy runs as follows:

"The Amazon will always be able to compete with Ceylon in prices. As cheap as they may be able to produce their rubber, the Amazon will be able to produce it still cheaper."

To be sure, the statistics of the Amazon, when compared with those of the East, have rather a pessimistic aspect. In 1905 the output of the Amazon country amounted to 35,000 tons of rubber. The product of the plantations amounted to 145 tons. The estimated yield for the present year is 35,000 tons for the Amazon, or just the same as 11 years ago, while the plantations will probably produce 90,000 tons. In other words, while the Amazon is just where it was a decade or more ago, the product of the plantations has increased during that period over 600 times. Moreover, while no one prophesies an increase in the Amazon production, at least for many years to come, careful estimators believe that within four or five years the plantations will produce 300,000 tons. Furthermore, men experienced with Amazon production place the cost of a pound of Upriver fine put on board at Para at 60 cents, while in the East many of the plantations have already reduced the cost of a pound of rubber to 25 cents, and in some cases to less than 20 cents.

In view of this deadly parallel a note of optimism from the Amazon is certainly most gratifying. Undoubtedly there will always be some rubber coming from the Amazon, regardless of price reductions in the East. But unless some comprehensive plan of colonizing labor is adopted, shipments from Para are likely in time to consist chiefly of such rubber as is easily accessible and which may be gathered in time which would otherwise be unemployed, and the returns from which, whatever the market price, will be viewed as so much clear gain.

The Story of Gutta Percha—III.

BOTANY.

IT may well be imagined how great was the desire of all intelligent persons, when gutta was first brought to Europe, to know the identity of the tree from which it was derived. In 1844 the Rev. Edward White, Chaplain of Singapore, sent a dried branch of the tree to Dr. William Griffith, of the Madras Medical Service and superintendent of the Botanical Garden of Calcutta. There was neither flower nor fruit, but from the leaves Dr. Griffith was able to decide that it belonged to the Natural Order, *Sapotaceae*. He thought that it might belong to the genus *Chrysophyllum*, but would not pronounce on this matter. *Chrysophyllum*, however—though one species has been found in Malaya—is chiefly an American genus. It gets its name from the beautiful golden color of the underside of its leaves, and this peculiarity is shared by the tree which furnishes the gutta percha. The fruit of *Chrysophyllum cainito* is the star-apple of the West Indies.

It was not until 1846 that a flowering branch was sent to Kew Gardens by Mr. Thomas Lobb, botanical collector for the Messrs. Veitch, nurserymen of Exeter. Sir William Hooker made an examination of the plant and found that the corolla had fallen off, and while he was able to confirm Dr. Griffith in placing it among the Sapotads, he was yet unable to determine the genus. He thought it might belong to *Bassia*, an East Indian and African genus, which includes the butter trees of India. In 1847 specimens of branches with flowers and fruit were received by Sir William Hooker from Dr. Oxley, of the Indian Medical Service.

LOW GRADE GUTTA, SUNTAI BASSAI.

The amateur botanist is usually impatient with synonyms and often with good reason. The renamer, who spends his arid existence in trying to find excuses for renaming discoveries of better men, is an unmistakable nuisance and hardly a fit subject for conversation in which polite restraint is necessary. But it is a fact that even the greatest botanists are not infallible and the name chosen by Sir William Hooker was discarded by his own son at a later date. *Isonandra gutta* was the name under which this famous tree was first made known to the world. *Isonandra* is sonorous and rythmical, though the meaning "equal stamened" is far from a distinctive trait. The genus had been established by Wight in 1840 and is represented by several species, along with which Sir William placed the newly determined species. This was in spite of the fact that *Isonandra* had its flowers in fours and the newcomer in sixes. This might have been regarded as merely a specific difference if other species had not been found which agreed in this and other respects with the gutta percha tree, and in 1864 a generic difference was established by Thwaites under the name of *Dichopsis*. The specific name *gutta* was retained; and to this naming Bentham and Hooker agreed. Thus the matter stood until the late Dr. Burck, of the Dutch East Indian Service, called attention to the fact that Padre Blanco had in 1837 given the name *Palaquium* to indubitable specimens of the genus known as *Dichopsis*. By every rule in the establishment of nomenclature this name is entitled to stand and has now gained very general acceptance. This discussion is necessary to a correct understanding of the subject and there is really no excuse for the further use of *Isonandra* or *Dichopsis*. The question of correct nomenclature is of extreme importance to an intelligent understanding of any subject.

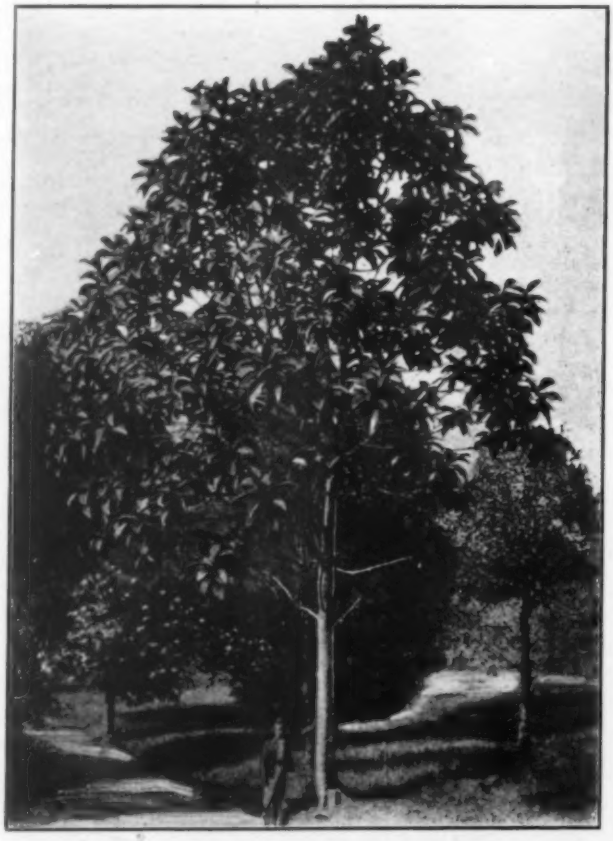
So it is *Palaquium gutta*, Burck, which takes its place in the botanical lists of all future time; and it is fitting that this honor should fall to one who has done so much for the knowledge of gutta percha and in preparing the way for its continued production. As to the question of whether *P. oblongifolium* and *P. borneense* should be recognized as species or as varieties of *P. gutta*, it must be said that in this, as in all like matters, the burden of proof lies with the "splitters" of species. The differences are but slight—size of leaf, etc.—and the three varieties, or species if it be insisted upon, furnish the only gutta percha of first class quality. Everybody is able to remember *Palaquium gutta* and there is certainly a call for good reasons when people are asked to remember three species instead of one.

The Order *Sapotaceae* is found in the tropical regions of Asia, the East Indies, America and Africa. The Sapotads are related to the Ebony and Storax families, but not to any order which includes any caoutchouc-producing plants. All of these families are represented in the United States, though by a very few species. Of the *Ebenaceae*, one is the persimmon. The *Styraceae* includes the tree which produces the gum benzoin or gum benjamin, the source of the benzoic acid and benzoates of commerce.

Careless writers and even some botanical textbooks have called Sapotads "Soapworts," being misled by a curious resemblance of the words *Sapota* and *Sapindus*, the specific name *Saponaria* (the soapberry) of one *Sapindus* and the fact that several species of the latter possess saponaceous principles. But while *Sapindus* is "soap of India," *Sapota* is from the native Mexican name

referring to the type genus, now called *Achras*. The *Sapotaceae* have no relation whatever to the *Sapindaceae*, which order includes our common maple. The fact that the woods of a few species contain saponin gives much less warrant for calling the *Sapotaceae* "Soapworts" than would the same fact about the Pink Family. Another error which has been made by careless writers is to speak of the gutta percha tree as "guttiferous." This adjective is properly used only with reference to the *Guttiferae*, the Gamboge Family, which includes no gutta percha or rubber-producing plants. The resemblance in name is quite accidental, being derived from the Latin "gutta," meaning tear, and refers to the drops of resin which exude from trees of this order. The Sapotads—trees and shrubs—include forty genera and about four hundred species. All contain a milky juice, of which gutta percha, while the most important, is not the only one with commercial value.

Achras, which, as *Sapota*, gave its name to the order, furnishes the gum chicle which, as chewing gum, gives employment to unnumbered millions of American jaws. This tree, once *Sapota achras*, but now *Achras sapota*, bears the fruit known as the sapodilla or sapodilla plum, one of the most agreeable of tropic fruits, and it was cultivated in the West Indies for years before its gum had become the chief course at the barmecide banquets of the present-day American. Another very important Sapotad is the genus *Mimusops*, found in the tropics of both hemispheres, and one American species, *Mimusops balata*, furnishes the valuable gum bearing the tree's specific name, which is also the name used by the natives.



GUTTA TARRAP, ARTOCARPUS KUNSTELERI.

Not all the Sapotads yield a gum which by any possible license can be called gutta percha, and only *Palaquium gutta* and its two varieties or sub-species furnish the first class gum; but there are a number of trees, all belonging to the same order, which furnish gutta percha of a more or less inferior quality. They include *Palaquium, Payena, Isonandra* and possibly some other genera. It is a matter of definition whether balata and the karite gum of West Africa be classed as gutta percha, but it is just such a question as to whether cauliflower is cabbage. The botanist says that it is, but the cook says it is not. The botanist, the chemist and the customs officials may be a unit in declaring these gums gutta percha, but the manufacturer has another opinion. And it is the opinion of the man who deals with the material that fixes the custom which lexicographers must confirm and all others admit. The botanist tells us that the bean-pod is a fruit while the strawberry is not; but when we order fruit with our breakfast we are likely to mean strawberries rather than bean-pods. But whatever the case about these gums, there is no doubt about such gums as the so-called pontianac gum, the "gutta jelutong," which comes from *Dyera costulata*, a gigantic tree of the Dogbane Family. They are not gutta percha, but low-grade rubber. It may be said with all possible emphasis that no tree of the Natural Order *Sapotaceae* produces

PALAQUIUM GUTTA.

PALAQUIUM OBLONGIFOLIUM.

PAYENA LEERI.

rubber; no plant outside of that family produces gutta percha.

The geographical limits are almost equally precise. The best gutta percha, that from *Palaquium gutta* and its sub-species, comes only from the lower part of the Malay peninsula, the two great islands of Sumatra and Borneo, together with the smaller islands immediately adjacent to the three chief land masses. The other species which produce what manufacturers recognize as gutta percha, though not of the best quality, are found in a slightly more extended territory, including the entire Indo-Malayan region as far as Wallace's Line. This line, named after its discoverer, Alfred Russell Wallace, marks a sharp separation between the flora and fauna on either side of the line. On one side the plants and animals are essentially Asiatic, on the other they show the characteristics of the Australian region. This line runs between Bali, an island at the east end of Java, and Sembok, twenty miles further east; passes between Borneo and Celebes and then extends south of the Philippines, which belong to the Asiatic group and, as it happens, possess several species of gutta-producing trees of the genera *Palaquium* and *Payena*. Of course, Wallace's Line has been crossed, in the course of ages, by many species of plants and animals and it is possible that there is some truth in the story of the finding of gutta percha in German New Guinea, but the species reported are said to have Malay names, which indicates that their importation was of recent date and does not affect the main facts of the distribution of the gutta percha trees.

PALAQUIUM GUTTA.

Closely related to the Ebony Family, the Sapotads resemble them in the structure of their woods which, however, generally speaking, are red instead of black. As in most extensive orders and genera there is a wide range in density, etc., some being fine cabinet woods, while others are comparatively soft and adapted only for boards and lumbers of inferior class. This is important from an economic point of view because trees, even if long lived, are not immortal and the ultimate value of the lumber product is a necessary factor in a correct estimate of the value of a plantation. Unfortunately, the wood of *Palaquium gutta* is not first class, though of handsome appearance and well adapted for purposes where great strength or hard usage is not expected. *Payena leeri*, which gives a good quality of gutta percha, furnishes a hard and valuable light brown wood, which is more than twice as heavy as that of *Palaquium gutta*. The wood of the balata, as well as that of the chicle tree, is handsome and valuable.

Speaking again of what the botanists have done in naming and renaming gutta producers, the following partial list is most informing:

Palaquium gutta .....Burck
Palaquium oblongifolium .....Burck
Palaquium parvifolium .....Burck
Palaquium pisang .....Burck
Palaquium quercifolium .....Burck
Palaquium acuminatum .....Burck
Palaquium Oxleyanum .....Pierre
Palaquium calophyllum .....Pierre
Palaquium Ridleyii..King and Gamble
Palaquium mycrophyllum.
King and Gamble
Palaquium Herriyi..King and Gamble
Palaquium stellatum.King and Gamble
Palaquium Clarkeanum,
King and Gamble
Palaquium maingayi..King and Gamble
Palaquium petiolare .....Engl.
Palaquium supfianum .....Schl.
Palaquium baruesii .....Merrill
Palaquium Ahernianum .....Merrill
Palaquium mindanaese .....Merrill
Palaquium Luzoniense .....Ridal
Palaquium cuneatum .....Ridal
Dichopsis gutta .....Benth
Dichopsis Krantziana .....Pierre
Dichopsis helferi .....Clarke
Dichopsis obovata .....Teysmann
Dichopsis polyantha .....Benth
Dichopsis elliptica .....Benth
Dichopsis maingayi .....Benth
Dichopsis polyantha .....Benth
Isonandra gutta .....——
Isonandra costulata .....——
Isonandra oblongifolia .....——
Isonandra Perakensis,
King and Gamble
Isonandra chrysophilla .....——
Payena Leeri.....Benth and Hook
Payena Havilandi..King and Gamble
Payena dasyphylla .....Pierre
Payena rubropedicellata .....Burck
Payena stipularis .....Burck
Payena paralleloneura .....Kurz
Payena latifolia .....Burck
Payena pedicellata .....Burck
Payena Mentzelii .....K. Sch.
Payena Bawun .....Scheffer
Payena longipedicellata .....Brace
Mimusops Henriquesiana,
Eng. and Warb
Diplorynchus Mozambiensis ...Benth
Diplorynchus Angolensis ....Büttner
Achras Australis .....——
Bassia Curticii.....King and Gamble
Bassia Aristulata...King and Gamble
Bassia Motleyana .....Clarke
Sideroxylon grandifolium .....Wall
Sideroxylon tormentosum .....Roxb.
Sideroxylon Ferrugineum .....Hook

SOURCES AND SUPPLY.

In 1857 a committee of the Ohio legislature reported that there was no need of protecting the passenger pigeon because that bird existed in such countless numbers that the ceaseless activity of the gunners could never effect any serious diminution. Today there is in the world just one solitary passenger pigeon, awaiting in captivity the day when death shall take it to join the millions of its kind, exterminated by man's brutal and fatuous greed.* Twenty years ago the leading rubber manufacturers were interviewed as to the desirability and possible profit to be found in the culture of india rubber. Without a single exception the answers were deprecatory, and they make curious reading at a time when quite half of the india rubber coming to the world's markets is from the plantations of countries then furnishing a negligible quantity of the rubber supply. Here are some of the comments:

"The stories about rubber planting strike me very much as Jules Verne's writings—good reading, but of no practical use. I believe it would be as easy to import the rubber lands and place them in the United States as to successfully operate a large rubber plantation."

"Why do I not interest myself in the cultivation of rubber? I will answer that question by asking another. Why don't I go into the cultivation of coal? In other words, what is the use of doing what is already well done?"

"The rubber forests are inexhaustible and a scarcity of rubber or an inadequate supply seems out of the question. No

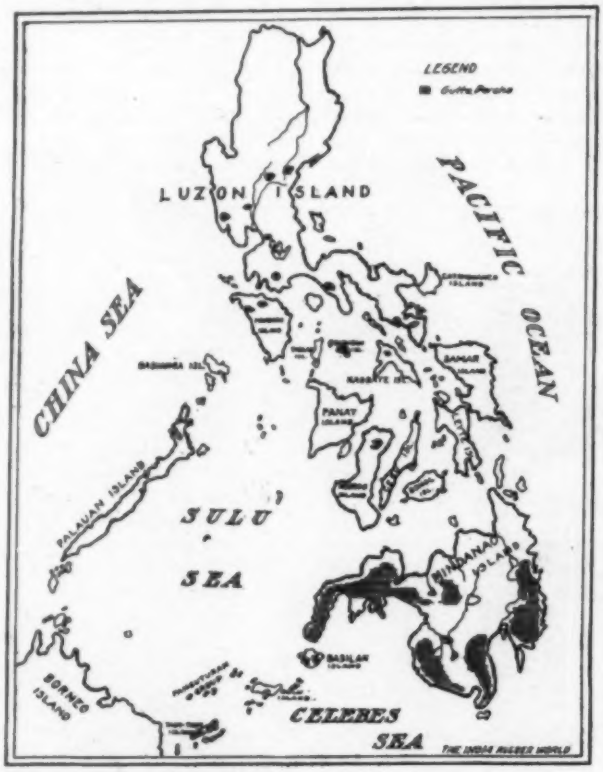
*The daily papers recently noted the death of this specimen.

necessity for rubber plantations exists and therefore no capitalist pays any attention to it."

"The rubber forests are boundless, inexhaustible. Hardly the fringe has been touched."

"What is the use of trying to do what the Almighty has done so well for us?"

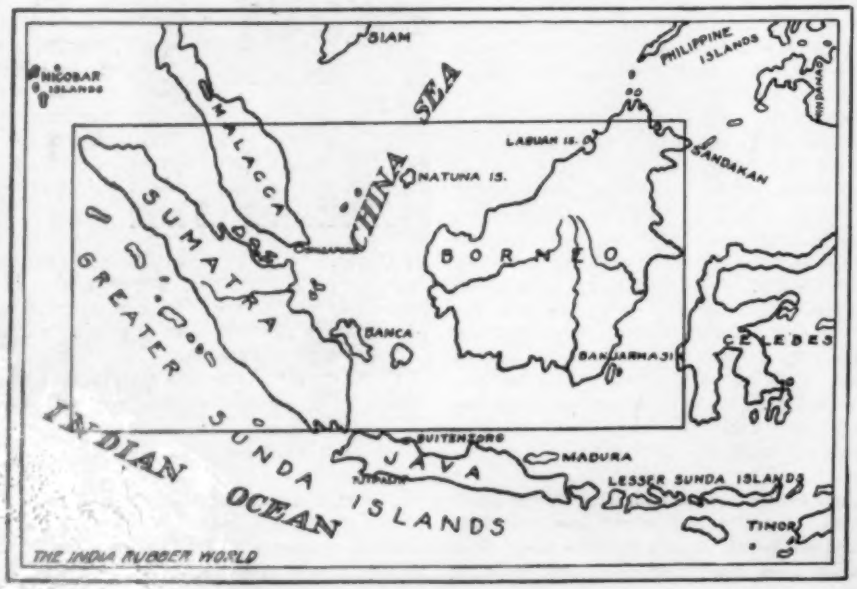
It is necessary to make some such exhibit as the foregoing in order that we may understand the amazing frame of mind which has permitted the sweeping away of the forests which have supplied the gutta percha of which the world has stood in need. Buy all that comes; make all the money possible out of it; let posterity look out for itself. What has posterity done for us? Seventy years of this attitude have reduced the once abundant supply of gutta percha trees to such an extent that they are now found only in remote districts, where the remaining specimens are being mercilessly combed out. The usual solemn ceremony of locking the stable after the horse is stolen has been faithfully carried out and forest regulations have been made after the forests were stripped. It has been said that there was no danger of extermination because the natives would not kill out young trees for the reason that these would not produce gutta percha. As well say that cattle would not be exterminated so long as young calves were not killed. The trees old enough to produce seeds were old enough to produce gutta percha and this pronounced their doom.



MAP OF THE PHILIPPINES.
The Shaded Portion Shows the Distribution of Gutta Percha.

The amount of gutta percha imported into the United Kingdom in 1849 was, in round figures, one and a half million pounds. Since that time it has fluctuated from a little over a million to a maximum, in 1900, of over twelve millions, preparation being made at that time for several great cables. In 1912 the importations into Great Britain amounted to about five million pounds. As this includes balata and as there is a little true gutta percha sent from the Far East to other European countries, the two items may well balance each other; and five million pounds annually may be taken as the world's recent production of gutta percha. If the only use for gutta percha were the replacement of existing cable lines and these should last an average of forty years, half the present supply would be required to meet this demand. And when we consider that the present supply comes by natives going further and further into the fastnesses of the wilderness, it is evident that the end of the tale is near the telling and that it is a condition and not a theory that confronts us.

The gutta percha coming from some far tropic isle, where every prospect pleases and only man is vile, has had a long and unfortunate acquaintance with that vile exception and thousands of tons of concrete evidence of his villainy have been shipped across the seas in innocent cakes of gutta percha, which, like charity, is made to cover a multitude of sins. Of course, some bark and chips with other extraneous matter, like bits of the herbage on which the tree was felled or even a little of the soil, might reasonably be expected to be found mingled with an adhesive gum gathered by clumsy and careless workers. But this does not explain the sticks and stones; the dirt and rubbish of a thousand kinds which pass through the custom house, concealed by gutta percha, like nuts covered with chocolate.



MAP SHOWING DISTRIBUTION OF PALAQUIUM GUTTA.
Rectangular Figure Marks the Area of Its Best Growth.

Analyses show that the dirt runs from practically nothing to as high as forty per cent. Dr. Sherman, of the Philippine Forest Service, says that the natives, in preparing the gutta percha for market, "place the dirt, bark, sticks, stones, used-up hatchets, etc., on the inside as much as possible." (*To Be Continued.*)

Rubber's Service in Quarantine.

UNDER normal conditions 800,000 persons and $800,000,000 worth of goods enter this country through the port of New York every year. Indeed, it is authoritatively stated that 70 per cent. of all the immigrants admitted to the United States annually do so by way of the metropolis. No wonder, then, that Dr. Joseph J. O'Connell, the health officer of that haven for foreigners, has declared that "The port of New York is the sanitary frontier of the United States." There are 28 other seaboard cities where quarantine stations are maintained, and each and all of these serve as bulwarks or defenses against disease coming to our shores from other countries.

Rubber Covered Case for Testing Disinfectants.

While the usual tide of immigration from Europe has been greatly reduced because of the World War, still the number of foreign ships coming to our ports has materially increased, and because of this fact the quarantine of our seaboard cities must not flag in its vigilance. The average person imagines that it is the infected immigrant that is most to be feared. This is not the case, because the sick are comparatively easy to detect and so are those that are likely to develop some communicable malady. Our greatest peril lies in those apparently healthy people who, while immune themselves, are actually bearers of menacing germs. These "carriers," but for the tireless watchfulness of our quarantine officers, might all too easily get by into our populous cities, and once there they might form a center of infection that would soon involve scores and possibly hundreds of our citizens.

The story we have to tell is how these state and national officials work and are ever on the alert to safeguard the public health, and to describe the part in this vital service that rubber plays in many directions. Once more we shall see how this particular material meets the requirements with peculiar fitness, and through its agency the barriers are made more effective against alien enemies of the microscopic sort. The diseases likely to develop into epidemics are plague, typhus, smallpox, and cholera. We know fully well the ravages wrought by typhus in Servia since the beginning of hostilities in Europe a year ago.

Happily, it is definitely known now that the louse is the means by which this destructive disease is transmitted from a sufferer to a ready victim; and the health officer's problem, apart from dealing with the malady when discovered, is to hunt for these loathsome vermin upon incoming passengers and to place immediately under suspicion any person or persons of this sort, especially if they have been near anyone having typhus in any of its stages. These seemingly healthy but suspected foreign arrivals are called "contacts," and are sent to a detention station for quarantine where they can be segregated and watched. In the case of plague, science generally holds the rat responsible for the spreading of this dire malady, and even though a ship may come in with a clean bill of health, still she must be subjected to thorough fumigation for the destruction of all rodents if the craft has come from a port which has been visited by this disease at any time during many months previous. This is particularly the case if the vessel has lain right alongside the dock at the infected port, so that rats could come aboard.

At present the disease most being feared of foreign origin is cholera. The war between the Balkan nations and the Turkish empire reintroduced cholera into Europe, and because of the large fleet of ships reaching our shores now for supplies from that continent it is all the more necessary that our precautions be redoubled. However, even though the peril is increased by the present great conflict, still Dr. O'Connell gives us this reassurance: "Rapid progress in the comparatively new science of bacteriology has given to sanitarians the immeasurable advantage of a precise knowledge of the causative agencies of cholera, plague, and typhus fever, the three scourges of major importance considered in connection with this war. Methods of isolation and sanitation have been worked out with the result of greatly augmenting the efficiency of public health officers."

Now let us see how rubber figures in this battle in behalf of the public health. We can best do this by describing some of the routine work at one of our ports. Let us assume that the ship to be inspected has come from an infected port, or that the foreign seaboard city is the outlet for a region in which

Sponging Off with a Solution of Bichloride of Mercury.

one of these communicable diseases is prevalent. For the sake of example let us choose typhus fever. The inspectors board the craft at quarantine. Each is armed with a clinical thermometer held in a hard rubber case. The gangways are guarded so that everyone on board must march before these officers, the number must tally with the ship's list, and no chance is given anyone to "repeat" so that a sick man can be impersonated by a well one while he lies hidden. In making this inspection, the quaran-

tine doctors frequently wear rubber gloves, and in rainy weather they don a rubber uniform from head to foot.

The typhus patients and the "contacts" are promptly removed, while the ship remains at quarantine for fumigation. The sick go to a ward or island set apart for the treatment of infectious diseases, and the "detains" are segregated elsewhere after undergoing an anti-parasitic bath. Their clothing is sterilized by steam. Each "contact" has a brass identification disc, hung upon a rubber cord or necklet, and a similarly numbered tag is fastened to his clothing while undergoing sterilization. All quarantine employees who handle patients and "contacts" are equipped with rubber gloves. Nurses and orderlies engaged in the sanitation of "contacts" and the treatment of patients wear rubber gloves and aprons, and the nurses' hair, tightly dressed, is covered by rubber caps.

In the disinfecting chamber the big iron doors are hermetically sealed by means of thick rubber gaskets, and in all of the detention rooms, which must be fumigated, all ventilators have rubber gaskets and the windows and doors are provided with rubber stripping so that these openings may be made both air-tight and vermin-proof. Indeed, this manner of sealing all spaces is uniform, so that every chamber at quarantine can be fumigated from time to time. We find the most extensive use of rubber in contagious disease wards. At Swinburne Island, New York, a thoroughly typical ward is provided with rubber flooring, pillow slips of rubber, rubber sheeting between the patients and the mattresses, rubber in various forms in the medical cases, while the attendants wear rubber-soled shoes to deaden sound. The modeling of all corners, combined with the wide use of rubber, makes it possible, after the removal of patients, to thoroughly fumigate and then to wash down the walls, ceiling, etc., by means of a hose turned loose freely. If any of the sufferers die, they are wrapped in rubber winding sheets before removal to the crematory for final disposition. Where vessels are disinfected after arrival with diseased patients, power pumps are employed for extensive work, and these use rubber hose having hard rubber nozzles of a duplex type, by means of which either a straight stream or a spray may be discharged.

THE WHITE RUBBER FUMIGATING CAPE IN SERVICE.

The attendants in the bathrooms where the "contacts" are given an anti-parasitic bath, all wear rubber boots in addition to the rubber coats and gloves which we have already described. Of course, the usual rubber utensils, commonly found in hospitals, such as hot water bags, ice bags, tubing, rubber corks, etc., are abundantly in evidence. And in the bacteriological laboratory, where the specialists examine samples brought them from the incoming ships, rubber in many forms serves as nothing else will. One of our illustrations shows a sample case for testing the effects of a disinfectant on certain germs. This, when sealed, is covered with a close-fitting rubber cap.

But the quarantine service, both federal and state, is not alone concerned with keeping out diseased or germ-bearing persons. Our national welfare is very much involved in the proper administration of animal quarantine, both interstate and between this country and foreign ones. This is not confined alone to living animals but to many products of the animal industry, such as hides, hair, wool, horn, etc. These can all carry disease-breeding germs, and where there is the slightest chance of infection they are not admitted to the country nor allowed to be moved from state to state until properly disinfected. This disinfecting takes a variety of forms, depending upon the nature of the material, but where the germ-killing spray is used the operatives commonly wear rubber boots and rubber hose is well-nigh indispensable in the proper distribution of the disinfectant. Cattle cars, stockyards, etc., are thus treated when necessary, and one of the commonest disinfectants is slacked lime.

Perhaps to the rubber industry the most interesting quarantine campaign was that inaugurated last November and only recently brought to a successful conclusion. We refer to the battle here waged against the foot-and-mouth disease. The last previous epidemic was in 1908, but the widespread recrudescence of this old world animal malady late last year was marked with a good deal of virulence. The District of Columbia and 22 states developed cases in varying numbers, but the disease was most serious in 15 of the states and called for the promptest sort of action on the part of the state quarantine officers. It should be of interest to know that the origin of the outbreaks of foot-and-mouth disease in 1902 and 1908 were definitely traced to imported vaccine virus used on calves in the propagation of virus for use in vaccinating against smallpox.

As soon as the disease appeared last November, the state and federal authorities immediately organized their quarantine forces, and an army of fully 1,000 inspectors was detailed to deal with the epidemic radically. This meant that every farm and every stockyard had to be visited and not a single head of cattle overlooked in the search for traces of the malady. The equipping of this force made a good-sized demand upon rubber goods dealers. Each inspector had to be clothed in rubber from tip to toe. His outfit consisted of a rubber hat, a rubber coat, rubber gloves, and rubber boots reaching well above the knees. In addition to this he was provided with a white rubber fumigating cape.

The inspectors were called upon to examine the mouths and the hoofs of all beef cattle, and to see to the prompt disposition of the diseased and to properly disinfect the other animals and their quarters. It was not so much fear of personal consequences from the malady as to facilitate their washing down afterwards that the inspectors were clothed in outer garments of rubber. Each man had a tin basin and a sponge and his rubber clothing was liberally wiped off with a germicide bath of bichloride of mercury. But this superficial treatment was not enough to meet the exacting official requirements.

Lest the underside of the rubber overcoat might have become infected, it was necessary to kill any germs lurking there and at the same time to disinfect the clothing lying closer to the body of the inspector. As our illustration shows, the white rubber fumigating cape fastens snugly about the neck and is ample enough to completely cover the wearer. By spreading out the

bottom of the cape, like a tent, the rising fumes from the disinfectant would be caught and held until they had done their intended work. For this fumigation a mixture of formalin and permanganate of potash were used in their crystalline form. When mixed, a vigorous reaction takes place, and a large quantity of formaldehyde gas is liberated. This method is particularly efficient on account of the rapidity with which the gas is given off as well as because of its searching quality and its bacilli-killing properties. Thus, before an inspector left an infected place and packed his belongings to go somewhere else, his rubber clothing was both disinfected and fumigated.

The actual disinfecting of barnyards, stables, stockyards and the like must, of necessity, be carried out on a larger scale than would be possible by hand distribution of the germicide. Accordingly, in Pennsylvania alone, the inspectors, of which there were quite 150, were provided with steam-driven disinfecting pumps. As these could not use bichloride of mercury without inviting injury to the mechanisms, cresol—a preparation of creosote—was employed for a disinfectant. The force had a battery of 25 pumps of this sort, capable of spraying a large area very quickly, and each pump had at least 100 feet of the best rubber hose. This gives some idea of the manner and extent in which rubber served to effectually deal with one of the worst epidemics of the foot-and-mouth disease.

Of course, there are other diseases that are more or less with us always, such as the result of the animal tick, tuberculosis, Texas fever, anthrax, hog cholera, etc. All our state and government inspectors are continually on duty, and their supervision extends to post mortem examinations of animals as well as to the examination of meats and meat products in the preparing. Some of this work is of such a character that the men must wear rubber boots and possibly rubber coats in the discharge of their duties. This is particularly so where animals have to be dipped in suitable germicides to kill the disease-breeding tick, etc.

INSPECTING A STEER'S MOUTH.

In order to safeguard our domestic herds all imported animals are subject to inspection and quarantine just as are human immigrants. But this precaution is not always so confined. The service operates likewise to keep out certain diseases which are communicable from animals to people, as, for example, Malta fever—a malady which can be transmitted from infected goats by way of their milk. We have a number of animal quarantine stations where the incoming beasts are carefully watched for varying periods, and in the administration of certain divisions of this important work rubber plays its part to protect the operatives and to facilitate thorough fumigation and disinfecting. Despite the precautions which we insist upon before shipment from abroad, and the care taken in transit, diseased animals reach our ports, and for this reason our animal quarantine is most exacting.

The government owns and maintains three quarantine stations for animals imported through the ports of Boston, New York and Baltimore. The one at Athenia, New Jersey, 16 miles from New York, covers about 51 acres of ground and has 23 stables. The stables, most of which are modern brick structures, have a capacity of about 600 cattle. At every stage of their handling during the passage from ship to quarantine station, disinfected barges and cars are available. Rubber hose and rubber garments are used extensively, and as the station is widely illuminated by electric lighting, rubber, of course, is a necessary insulator. As the scientific side of this work calls for a bacteriological laboratory, here, too, rubber figures in many ways.

In addition to those at Boston, New York and Baltimore, animal quarantine or inspection stations are maintained by the government at Chicago, Kansas City and South St. Joseph, Missouri; Omaha, Nebraska; National Stock Yards, Illinois; Indianapolis, Indiana; Buffalo, New York, and Pittsburgh, Pennsylvania, as well as at the following additional ports of export: Portland, Maine; Philadelphia; Norfolk and Newport News, Virginia; Port Royal, South Carolina; New Orleans, and Galveston. Besides what the federal authorities do in this matter the states, too, do their part, and this makes in all a fair-sized army of inspectors and their subordinates. In addition, the railroad companies and proprietors of stockyards and stables located at the ports of export are required to keep separate, clean, and disinfected stockyards and pens or stables for the use of export animals.

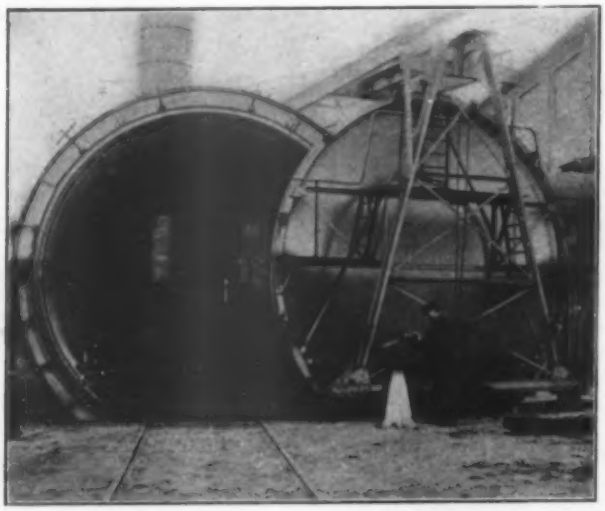
All of the principal foreign nations maintain quarantine services like our own against communicable diseases reaching their shores through immigrants, tourists, etc., and certain of them exercise the same safeguards in keeping out livestock carrying the germs of infection. In some cases the inflicted animals are segregated only for a prescribed period, while in other ports diseased beasts are promptly exterminated. The Canadian government has patterned its service after ours in the matter of animal quarantine. It must also be remembered that we maintain inspectors abroad at the principal ports from which cattle for breeding purposes are shipped to this country, and there, too, india rubber finds kindred uses.

The pumps used for disinfecting are commonly of two kinds: those operated by hand and those functioned by either steam power or gasolene motors. The hand-power affairs are much like the pumps used for spraying orchards. The steam-driven apparatus, of course, are bigger and are intended to deal quickly with larger surfaces. With all of them rubber hose and a good deal of it is needed.

But we are no less careful regarding the animals shipped out of the country, for the volume of that business depends entirely upon the healthfulness and the desirability of American livestock. Therefore, our inspection of these animals for export is extremely exacting, cattle are tested with tuberculin for the detection of tuberculosis and equine animals with mallein for the detection of glanders. During the five years ending with 1913, the Bureau of Animal Industry made over 2,500,000 inspections of animals for export. These places of inspection are scattered all over the United States. Today, because of the war in Europe, we are exporting a still greater number of animals to supply the needs of some of those foreign nations.

No ship is allowed to take cattle from our shores unless it is in a fit condition to receive them and likely to carry this livestock to the other side and deliver them there in a healthy and acceptable state. To make these vessels proper carriers it is needful to disinfect them, and again rubber lends its invaluable service to the proper execution of this precautionary work.

To refer again briefly to the European war, while various antitoxins have done much to reduce mortality, still the vast armies in the field would long ago have been decimated by one or more scourges but for the modern methods of disinfecting camps, trenches, and hospitals. The medical staffs of the several armies have looked very well, indeed, to this form of defense



A HUGE FUMIGATING TUBE HOLDING AN ENTIRE TRAIN

against devastating fevers, and it is in this particular that the present strife stands out in vivid contrast to past conflicts.

The one malady, however, that has caused an enormous sacrifice of life has been typhus. This has lingered in the Balkan region since the war there several years ago, and within the past twelve months Serbia has suffered frightfully from that fever's ravages. The Russians also contracted the disease during the campaign in the Carpathians and in Galicia, and the Teutonic medical men, especially those of the German armies, have taken

CAR BEING FUMIGATED BY STEAM FROM A LOCOMOTIVE.

effective means to rear a barrier against the spread of that scourge among the Kaiser's forces and in the Fatherland where Russian prisoners are quartered.

For this service they have had recourse to the sterilizing power of steam. The particular object of this method of attack is the typhus-transmitting louse. Unhappily, the filthy creature is a very common thing among the lower classes of the Czar's subjects, and the hardships of camp and march have engendered careless personal habits, thus favoring the propagation of these disease-carrying insects. As a precaution, the Germans have instituted disinfecting plants at many points for the sterilizing of clothes and the destruction of these vermin. All railroad trains used for bringing in from Russia either Russian or German wounded from the eastern field of action are thoroughly cleansed in this fashion by steam. At Potsdam, for instance, a great steel cylinder, sealed at both ends by circular doors seating on rubber gaskets, makes it possible to run a whole train inside for sterilization. The steam, hot water, or formaldehyde is delivered by rubber hose from an available plant. Again, the same death-dealing vapor is blown into other cars used for transporting troops to and from the eastern theatre of war, and thus disease germs of every kind are effectively disposed of. Our illustrations give a very comprehensive idea of the means and the methods employed in this vitally necessary service.

ITALY AS A MARKET FOR AMERICAN RUBBER GOODS.

Although a state of war has never been officially declared to exist between Italy and Germany, the former's entry on the side of the Allies has broken off all her commercial relations with the German empire.

Italy has been a large purchaser of German rubber goods, but it is a question whether she will be so in the future if it can be avoided. The latest available statistics of the rubber trade between Germany and Italy are for 1913, which was the last normal commercial year. These statistics only show direct imports from Germany, not taking account of the large quantities of German rubber goods that reached Italy indirectly through other countries. They show that Italy imported 54,533,600 pounds of German rubber goods, consisting principally of rubber sheet, rubber solutions, rubber thread, hose, tubing, solid and pneumatic tires, printing cloths, rubberized and elastic fabrics, rubberized garments, mechanical goods such as packings, belts, etc., rubber and gutta-percha covered wires and cables, and hard rubber goods. The most important imports were insulated cables and wires.

The war will undoubtedly result in the extension of the uses of rubber and rubber goods in Italy. Italians will hardly be disposed to purchase from Germans if they can do otherwise with equal satisfaction. Italy should, therefore, offer a good field for American rubber manufactures.

AMERICAN EXPORTS OF MOTOR VEHICLES.

The fiscal year ending June 30, 1915, marked the close of an exceptional period in the annals of the American motor truck industry. Exports of commercial motor vehicles amounted to 13,996 machines, valued at $39,140,682, as compared with 784 vehicles, valued at $1,181,611 exported during previous fiscal year and 993 commercial automobiles valued at $1,737,141 exported during the 12 months ending June 30, 1913.

The year 1914-1915 was less favorable to exports of pleasure cars, which only amounted to 23,880 cars, valued at $21,118,953, against 28,306 machines, valued at $25,392,963 during the previous year and 24,292 vehicles, valued at $24,275,793 exported during the fiscal year 1912-1913.

AEROPLANES ARE IN DEMAND ABROAD.

During June and July of the present year Great Britain imported from the United States aeroplanes valued at $765,544. Italy imported aeroplanes worth $10,105, and Mexico imported $3,535 worth of flying machines during the same period.

REDUCTION IN PENNSYLVANIA TIRE PRICES.

On September 1 the Pennsylvania Rubber Co. reduced the prices of its smaller sized vacuum cup tires. The following are some of the new prices: 31 x 3½, $16.90; 30 x 3½, $16.20; 30 x 4, $19.55; 28 x 3, $12.65; 28 x 3½, $15.40.

What the Rubber Chemists Are Doing.

VARIATION IN RATE OF VULCANIZATION OF RUBBER.

THE "Malay Mail" reports a lecture on "The Variability of Rubber," delivered in July at Klang by B. J. Eaton, chemist of the agricultural department of the Federated Malay States.

The lecturer referred to two terms of frequent occurrence—standardization and uniformity—both as yet hazy and indeterminate. There is a marked tendency to look to fine hard Para as the standard because manufacturers have had experience with it extending over many years. That, however, is the only argument in its favor. The term uniformity, as applied to rubber, means rubber of the same type. Different types of rubber may vary in mechanical strength, but variation in vulcanizing quality is far more important to the rubber manufacturer. The matter of form and appearance is of little consequence to the manufacturer, although important to the broker, buying and selling on looks rather than by test.

In vulcanizing rubber with sulphur the manufacturer has recourse to three methods in securing a given result. He may vary the amount of sulphur, or the temperature and time of vulcanization. In the experimental work of the agricultural department, the sulphur and temperature were fixed and the time varied. In the original experiments all the rubbers tested gave their best results in 2½ to 2¾ hours. Different mechanical results were obtained by changing the time of cure. Subsequently a piece of Byrne-cured (smoked) slab rubber gave its maximum mechanical results at 1½ hours' vulcanization. Ordinary Byrne-cured loaf vulcanized in the normal time of 2½ to 2¾ hours, and the inference was drawn that the Byrne method of smoke curing has no effect on the rapidity of cure.

To demonstrate this point rubber slabs were made and smoked in an ordinary smoke house, and these were vulcanized in 1¼ to 1½ hours. Then unsmoked slabs of pan coagulum, made the same thickness as the smoked slabs, were tested and found to vulcanize much more quickly than either the Byrne-cured slab or the ordinary smoked slab. Evidently this was due to the form in which the rubber was prepared, and had nothing to do with the smoking which actually retarded the vulcanization.

Further experiments led to the conclusion that an alteration or a presence in the latex, and in the coagulum, caused this marked variability in the rate of vulcanization.

Rubber consists approximately of 94 per cent. of caoutchouc, 1 per cent. of mineral salts, 2 to 3 per cent. of resins, and 2 to 3 per cent. of protein. The ingredient most liable to change is the protein, and probably some substance derived from this acts as an accelerator. Experimentally it was found that this change occurs in the coagulum if left for six days before being crêped. No evidence of this change can be detected in the appearance of the rubber, which in consequence requires to be tested to ascertain its vulcanizing quality.

As concerns rubber estate practice several factors affect vulcanization. These are thickness, *i. e.*, amount of serum removed; smoking, which retards vulcanization; the use of formalin or other preservatives; amount of acetic acid used in coagulation, and the dilution of the latex. The age of the tree also affects the proportion of protein and other constituents of the latex.

The more uniform methods now adopted on many estates tend to greater uniformity of product; but variability is due chiefly to the difference in rubber from different estates.

In these experiments, in preparing the block of pan coagulum, which was left in this form for some days, a really new type of rubber has been discovered. It vulcanizes more rapidly than fine hard Para and ordinary plantation grades, which take medium time. Only eight or nine samples of fine hard Para have been tested so far, but it is remarkable that all vulcanized in about the same time.

It is, therefore, natural for the small manufacturer to rely on fine hard Para. The reason for its lack of variation is attributable to the uniform method of its preparation, and not because of any intrinsic value of the method. As it may require two or three months to prepare a ball of fine hard Para, any variations in its quality are averaged.

The formation of the accelerating substance is believed to be effected by bacteriological action. Rapid curing samples show better mechanical tests than those that cure slowly.

Rapid vulcanization eliminates the danger of overheating, and that is probably the reason for the increase of strength.

The lecturer credits Dr. Schidrowitz with first pointing out this variability in rate of cure in plantation rubber, of which the experiments at the agricultural department first showed the cause. It is possible now to prepare a rubber which will vulcanize correctly at any particular time, within certain limits.

In conclusion, Lawrence Lewton-Brain, director of agriculture, Federated Malay States, remarks that, although an insufficient number of experiments have been completed, the results already obtained indicate that the variability in the rate of cure is probably caused by a difference in the quantity or quality of certain non-caoutchouc constituents of the latex, which remain in the rubber after coagulation. There may be other factors, such as the physical condition of the caoutchouc which affect the quality of the material as regards elongation and tensile strength. This problem is now being investigated.

POTASH FROM HEVEA.

The following analytical data appeared in a review of the potash situation given recently in one of the papers published in the tropics:

Hevea:	Ash. Per cent.	Potash. Per cent.	
Bark	10.6	9.2	on ash
Leaves	4.4	25.8	on ash
Leaves, old	4.4	4.7	on ash
Wood	6.0	13.5	on ash
Seed husk	1.6	0.31	on sample
Seed meal	3.4	.....	on sample
Latex	0.35	43.0	on ash
Crêpe	0.4	23.4	on ash
Biscuit	0.4	26.4	on ash

SULPHIDE OF CARBON AS A VULCANIZER.

Mathews and Strange have discovered that a solution of natural or synthetic rubber subjected to 40 per cent. carbon disulphide in a closed vessel, turns into "gel" which, when dried, is vulcanized rubber.

COAGULATION OF LATEX BY ELECTRICITY.

Coagulation of rubber latex by electricity has been successfully performed on plantations where acetic acid was scarce. This coagulation is effected in a porous vessel with carbon electrodes, using a low tension current. The latex is slightly diluted with water and the gum separates very rapidly. It is perfectly clear and limpid.

INFLUENCE OF PROTEINS AND RESINS UPON VULCANIZATION.

In a very interesting study Stevens shows the influence of these two substances upon vulcanization. Rubber, completely freed of its proteins and resins, only sets 1.8 per cent. of sulphur, whereas when simply washed it sets 2.86 per cent. of sul-

phur. The breaking strength is 178 grams in the first case and in the second case 66 grams per square millimeter. The stretching constants vary in the same proportion. By adding resins, proteins or casein to rubber the coefficient of vulcanization and the physical characteristics are increased.

VULCANIZATION OF GUTTA PERCHA.

Dittmar has vulcanized compounds with various proportions of resins, gutta percha and sulphur and thus obtained a series of ebonites. By this treatment an important percentage of resin becomes insoluble in acetone, in proportions varying between 2 and 4 1-2 per cent.

RUBBER SUBSTITUTE.

A modified form of sulphurized oil rubber substitute has recently been patented by an Austrian chemist, V. Ottorepetz British patent No. 21,524 (1914). The substitute is made from fatty vegetable oils by the combined action with heat of sulphur and dilute nitric acid. In this way a tough substance is obtained which is soft when hot and elastic when cold. After washing, this material is vulcanized with sulphur in the same manner as ordinary india rubber. The following is an example, in detail, of the manufacture of this product.

To one kilogram of linseed oil 150 grams of sulphur are added and the whole heated to 130 degrees C., to dissolve the sulphur. This liquid is poured into its volume of dilute nitric acid; heated and agitated for several hours in a water bath until the liquid is converted into a yellow body which is soft when hot and elastic and tough when cold. Notable quantities of sulphuric acid are to be found in the nitric acid. This body is thoroughly washed with water, and dried in thin layers at 100 to 110 degrees C.

To one kilogram of this dried material, 200 grams of flowers of sulphur and a sufficient quantity of benzol is added for converting the whole into a gelatinous dough which is then dried and vulcanized by heating. The product thus obtained is said to be tough and elastic and to serve as a successful substitute for rubber.

PATENTED TREATMENT OF RUBBER.

PURIFYING ISOPRENE.—F. E. Matthews and E. H. Strange—British patent No. 6,897 (1914)—purify unsaturated hydro-carbons (isoprene) by treatment with sulphurous acid and alcoholic hydrochloric acid.

ACCELERATORS.—British patent No. 10,833 (1914); addition to No. 4,263 (1914). (See THE INDIA RUBBER WORLD, August, 1915), S. J. Peachy. Paranitrosodiphenylamine or reduction products of the nitroso-compounds mentioned in the parent specification—such as dimethyl-paraphenylenediamine—are used for accelerating the vulcanization of natural or artificial caoutchouc.

LEATHER, WATERPROOF AND NON-SLIPPING.—United States patent No. 1,150,047, Alex. McLennan. Leather is treated in a drum with a solution of rubber and celluloid in acetone, together with a solution of amber resin dissolved in benzol and a solution of juniper gum.

CONDENSATION PRODUCT WITH RUBBER.—United States patent No. 1,150,642, Hans Stockhausen. Heating formaldehyde with phenol until a liquid intermediate product is formed, and mixing this product with ferric chloride until a plastic, moldable mass is obtained, which mass is mixed with caoutchouc and sulphur, and hardened by heat.

RUBBER SUBSTITUTE.—British patent No. 1,171 (1914), Joseph Baier and Arthur G. M. Weale. Dry animal tissue is converted into a viscous jelly by treatment with zinc chloride solution or hydrochloric acid, thickened with dry, starchy matter, and air dried. A solution of rubber in turpentine is then mixed to form with it a thick dough. The paste thus formed is the rubber substitute and is applicable to leather or fabric. The substitute may be cured by heating at 250 degrees C. till tough.

SUBSTITUTE FOR EBONITE.—British patent No. 76 (1914), Ernst Krause and Hans Blücher. Albuminous and cellulosic yeast residue is mixed with dry powdered albumen to a uniform mass. This is treated with formaldehyde and the water removed by pressure and evaporation. Ebonite-like material is obtained from this material at 100 degrees C. under high pressure.

RECOVERING RUBBER FROM AUTOMOBILE TIRES.—British patent No. 16,116 (1914), H. Debauge. The tires are soaked for two or three days in xylol or other solvent, when the fabric can easily be stripped away from the rubber. The rubber attached to the fabric layers can be removed by a revolving wire brush. The rubber is ground while in the brittle, swollen condition produced by the solvent, and the latter recovered from the rubber and fabric by steam or dry distillation,—in the latter case under reduced pressure. The solvent may also be removed by washing with acetone or alcohol. (THE INDIA RUBBER WORLD, October 1, 1914.)

COAGULATION OF LATEX.—British patent No. 1455, Carlos de Cerqueira Pinto. A coagulating preparation consisting of a mixture of varying proportions of creosote, hydrochlorate of quinine and carbonate of soda dissolved in alcohol. This solution is diluted preferably with the wash water resulting from washing coagulated latex, and the dilute mixture added to the latex to be coagulated. The coagulation takes place rapidly and the rubber obtained possesses the entire nerve of the latex employed.

RECLAIMING WASTE RUBBER.—British patent No. 12,271 (1914), Frank Vincent O'Neill, Boston. A process for dissolving out the caoutchouc from vulcanized waste rubber. The waste is treated in a closed receptacle, under pressure (about 60 pounds) at a temperature below that detrimental to the rubber product (266 degrees F.) in the presence of boiling resin spirit. The solvent is removed from the dissolved and devulcanized rubber by evaporation. The product is said to have all the characteristics of the original rubber compound before vulcanization.

SYNTHETIC SUBSTITUTE FOR GUTTA PERCHA, BALATA AND CAOUTCHOUC.—British patent No. 17,253 (1914), Arthur Heinemann. A process for producing a homogeneous substance possessing properties similar to gutta percha and balata from butadiene and the like; such as isoprene, dimethyl, butadiene and generally hydrocarbons possessing two conjugate double links. These hydrocarbons are dissolved in acetone and polymerized by passing sulphurous acid gas into the solution. The resultant precipitate of polymerized hydrocarbons is then compressed for four days at 6,000 pounds per square inch to remove the oily liquids present and produce a homogeneous mass. The product is vulcanizable with sulphur.

PLASTIC COMPOSITION.—J. S. Campbell, British patent No. 9,370 (1914). Plastic composition consisting of a mixture of finely divided leather, fatty or resin oils, mineral fillers, sulphur and rubber, gutta, balata or rubber waste adapted to be calendered or dissolved and spread on fabrics, prepared by vulcanizing for use as packing, shoe soles, belting and tire treads.

PONTIANAK (JELUTONG) RUBBER RESIN.—Charleton Ellis and A. A. Wells have done much experimental work on Pontianak resin solutions. Their conclusions are: (1) Of the solvents or thinners commonly used in varnish and paint oil making, benzol is the most energetic on Pontianak resin. (2) Heating the resin for an extended period makes it more soluble and increases the proportion of unsaturated bodies. Temperatures above 650 degs. F. exert a marked influence, both as to solubility and chemical and physical properties. (3) Pontianak rubber resin is very inert to alkalies and, practically speaking, may be regarded as unsaponifiable.

THE interesting work on "Sulphide and Sulphate Sulphur" reported in this department last month should have been credited to H. P. Stevens, M.A., Ph.D., F.I.C.

[An interesting discussion on the subject of Pontianak resin will be found in THE INDIA RUBBER WORLD, July, 1909.]

THE NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

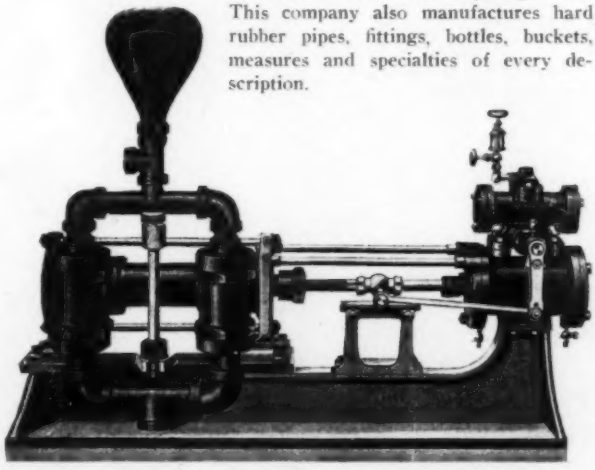
THE first exposition held in America devoted exclusively to chemical industries took place in Grand Central Palace, New York City, from September 20 to 25.

The progress of chemical industry was interestingly demonstrated by the attractive exhibits of 80 or more manufacturing companies and chemical, engineering and metallurgical societies, in addition to an extensive exhibit by the Bureau of Standards, Department of Commerce of the United States.

The chemical and allied industries represented, included paper, pulp, asphalt, explosives, aniline and vegetable dyes, hard rubber appliances for use in handling acids and other chemicals; molded dielectric materials, refractories, glass, abrasives, copper, lead and rare metals; laboratory apparatus; instruments for measurement of heat, electricity and pressure, and a large and varied display of machinery adapted for chemical manufacturing operations, such as mixing, distilling, draining, drying, evaporating, pumping and weighing.

Certain exhibits had special interest for the rubber chemist and manufacturer. Among these should be mentioned the display of chemical apparatus made by the Bureau of Standards, Lenz & Naumann, and Eimer & Amend. The latter showed the direct reading gravitometer of Young designed particularly for determining the specific gravity of rubber samples. Lenz & Naumann showed a torsion balance, by C. Becker & Co., for reading specific gravity of heavy liquids. The well-known and efficient mixing and solution churns of Werner & Pfleiderer have practically become standard in many branches of industry, and types were shown adapted to light work generally.

The American Hard Rubber Co. displayed a general line of vulcanite utensils for handling acids. This company also manufactures hard rubber pipes, fittings, bottles, buckets, measures and specialties of every description.



An interesting installation in their booth was a large electrically driven pump in operation, the liquid end of which is built entirely of hard rubber to withstand the destructive action of acids, alkalies, dyes or other corrosive liquids. The illustration shows one of these hard rubber pumps connected for steam instead of electrical operation.

Bakelite and condensite products were shown in great variety by the respective companies. These well-known products have remarkable adaptability, due to their chemical and physical qualities. In particular they are found as the insulating feature of many complex electrical devices and instruments.

An extensive line of machinery was exhibited, especially adapted to industrial chemical operations, with interest centering largely in that designed for the manufacture of dyes and accessory materials. In this connection the Buffalo Foundry & Machinery Co., Bethlehem Foundry & Machine Co. and Duriron Iron Castings Co. featured the anti-corrosive qualities of the cast iron used by them in the manufacture of kettles, stills and connections for handling acids. Samples of the metal were shown in comparison with ordinary cast iron, in sulphuric, nitric and hydrochloric acids. The machinery exhibit of the J. P. Devine Co. was limited because of the demand for their commercial apparatus, practically to laboratory apparatus, such as autoclaves, vacuum pans, pumps and vacuum dryers. Complete aniline manufacturing plants have recently become an important section of their output of general chemical machinery.

The work of the Bureau of Standards of the Department of Commerce was attractively displayed in distinct sections with placarded statements of the scope of each division of the work, which was made clear by actual apparatus and samples of materials examined, and by numerous photographs of testing machines used; and also a collection of the publications of the Bureau.

The scope of the work of the Bureau, as relates to rubber, embraces the following: Chemical, physical and electrical tests upon crude rubber, rubber hose, bands, valves, packing, gaskets, gloves, insulated wire and submarine cables; research and publications; methods of chemical analysis and physical testing; specifications; direct determination of rubber, mixing and vulcanizing of rubber; experimental plant for manufacture of rubber goods; testing mechanical rubber goods; physical properties of rubber, and the effect of temperature on physical properties.

EDITOR'S BOOK TABLE.

THE FINANCIER RUBBER SHARE HANDBOOK. TWELFTH EDITION. 1915. The Financier & Bullionist, Limited, London. [Cloth, 8vo., 815 pages. Price 2s. 6d., net.]

THE Rubber Share Handbook is a compilation of information regarding some 500 companies owning rubber producing properties in the East, Africa and South America, and gives in each instance the capital stock of the company, shares issued, office address, list of directors, cost of estate, and statistics of production, costs, etc. It also contains particulars of the industry generally, the following table, taken from the preface, showing the world's rubber production for the past two years with estimate for 1915, and the rate of total increase:

	Plantation.	Brazil.	Rest.	Total.	Increase, per cent.
1913	47,618	39,370	21,452	108,440	9.6
1914	71,380	37,000	12,000	120,380	11.0
1915	85,000	35,000	5,000	125,000	4.0

The author gives as his opinion that there is no present cause for anxiety among investors as to the price and supplies of crude rubber, but rather that the possibility may be kept in mind of an actual shortage by the end of the year, the war having created an increased demand. With regard to the future, the belief is expressed that the rubber producing industry is approaching a somewhat critical period. The year 1916 will mark the coming into bearing of large plantings made during 1911, from which a production of from 10,000 to 15,000 tons may reasonably be expected. This, with the 100,000 tons estimated as the 1916 output of the 750,000 acres planted prior to 1911, indicates an increase in plantation production of 25,000 to 30,000 tons.

Discussing the situation created by the war, since the commencement of which Germany and Austria—whose combined receipts of rubber for 1914 amounted to 14,000 tons—have succeeded in importing only a very small quantity of this material, the author believes that these countries will find it necessary at the close of the war to immediately replenish their depleted stocks. He also believes that, though there may be a temporary drop in rubber prices when peace seems imminent, due to dis-

continuance of the manufacture of military supplies, this will be compensated for by resumption of activities in other lines that have been affected by the war. Of course, there is little chance of a commodity continuing to sell at more than twice the cost of production when the supply is rapidly increasing, but there is good reason to believe that plantation rubber will always yield substantial if not phenomenal profit to its producers. Some of the old-established plantations have already reduced their cost of production to the neighborhood of 9*d* (18.24 cents) per pound, and the chances are that further reductions will be possible, though generally the cost on a yield of 400 pounds to the acre amounts to about 1*s* (24.33 cents) per pound. The cheapest producers to date are in the Straits Settlements. Ceylon's advantages in the matter of general expenditure are counter-balanced by a poor soil which necessitates the extensive use of fertilizers and naturally adds to the cost of production. The same applies to a great extent to Southern India. Sumatra should ultimately be able to produce crude rubber as cheaply as Malaya, but although the same claim has been made for Java, results do not appear to sustain the contention.

Regarding production per acre the editor states that he has fixed 400 pounds as an average for mature plantations, but that the productivity of rubber estates varies, like costs of production. Climate and soil are the two principal factors in rubber production, and in these respects Malaya is most favored, with Sumatra and North Borneo nearly as fortunate; so that these three countries should stand first in respect to yields. Fertilizers have enabled Ceylon to keep well up with Malaya in rubber yields in spite of her less favorable climate and poor soil. Droughts in Java are against that country's obtaining yields equal to those obtained in the other rubber producing countries, and Java is not likely to average more than 100 pounds of *Hevea* rubber per acre.

Of course, these facts do not necessarily affect the value of estate investments, for shares in an estate producing 600 pounds of crude rubber per acre may be inferior in value to holdings in another property yielding only 300 pounds per acre; everything depending upon the share market capitalization per acre of the respective estates.

Rubber trees in Malaya, Sumatra and North Borneo are generally considered tappable at the end of the fifth year, when the trees are about 18 inches in girth at 3 feet from the ground. In Ceylon, India and Java the tappable stage is reached about one year later. This is true only of plantations where there are no intercrops, for, when *Hevea* is interplanted with tea, coffee, cocoa, etc., the development of the rubber-producing trees is retarded, in some cases, as much as two years.

NEW TRADE PUBLICATIONS.

OUTING, SPORTING AND TENNIS LISTS.

THE new price lists of the United States Rubber Co., issued September 1, and covering its various brands of sporting, outing and tennis shoes, show what great expansion has taken place during the last few years in this particular department of rubber footwear. The company has issued five different lists as follows: "United States Rubber Co.'s Sporting and Outing Shoes," "The Glove Brand of Canvas Rubber-Soled Shoes for Tennis, Yachting and Dancing," "The Hub-Mark and Rival Rubber-Soled Canvas Shoes for Yachting, Tennis and Summer Wear," the "Rival Tennis" and "Vim Tennis."

All these lists are of uniform size, 3½ x 6½, but they vary in the volume of contents from the list of Sporting and Outing Shoes, which contains 28 pages, to the Rival and Vim Tennis lists, which consist of a single card. The twenty-eight page list contains thirty-six illustrations and describes over twenty different types of rubber-soled summer footwear. This list is quite an artistic creation, being printed in black, blue and buff and having at the top and bottom of every page some scene in colors appropriate to the shoe described. These little sketches, which are deftly done, show tennis, yachting, golf, camping, baseball and a variety of other spirited scenes.

The Glove brand list contains sixteen pages and shows as many half-tone illustrations of the outing shoes made in this brand. The Hub-Mark list is confined to eight pages and contains half-a-dozen illustrations showing the yachting, gymnasium and tennis shoes made with this popular trade-mark. The Vim tennis list is evidently intended for people who want comfortable summer shoes at a very comfortably low price. This brand embraces only Oxfords and the prices, which are net in all these different lists, run from 40 cents for men's to 32 cents for children's sizes.

The growth of the popularity of the canvas rubber-soled shoe and the development of different types to supply every demand, constitute one of the most interesting features of recent rubber footwear history.

SOME FIRESTONE BOOKLETS.

"Mileage Talks" is an interesting booklet of 24 pages, in octavo size, published by the Firestone Tire & Rubber Co., of Akron, Ohio, to show on just what tire mileage depends.

The booklet is full of information about tires, their durability and details of their construction. The whole is generously illustrated.

Another enterprising Firestone publication is evidently intended to assist retailers in utilizing Firestone advertisements. It is a 16-page booklet, 10¼ x 6¾ inches in size, the title, "Boom" spectacularly illustrated in black, pink and green on the cover by the blast of a cannon. Within are specific descriptions of the various Firestone "ads"—which include folders and catalogs, road signs of steel and cloth, posters, hangers, and even lantern slides—with "live wire" suggestions to the dealer as to how he may make use of them for his own benefit.

The Firestone Tire & Rubber Co., of Akron, is publishing a new house organ called "The Firestone." It is a four-page illustrated paper, intended for circulation among the employees in the company's many branches throughout the country and it gives a readable and naturally optimistic account of the various Firestone activities, both commercial and social.

On the occasion of the flag raising ceremonies described on page 620 of the August issue of THE INDIA RUBBER WORLD, the Essex Rubber Co., Inc., of Trenton, New Jersey, distributed an attractive souvenir in the form of a metal medallion three inches in diameter, with a raised brass edge and having in the center, in a raised design, enameled in colors, the seal of the United States. The souvenir evidently is intended for a paper weight and is admirably adapted for this purpose.

A booklet issued by the General Bakelite Co., 100 William street, New York, with the somewhat complicated title of "Oxybenzylmethylenglycolanhydride"—the full chemical name for the condensation product known as Bakelite—contains a description of the distinctive properties of this compound and illustrations of the various products made of it.

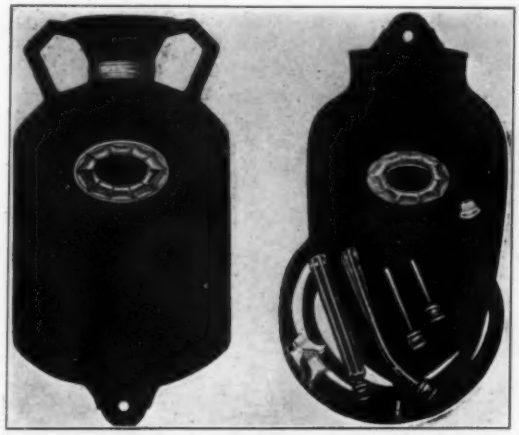
GOVERNMENT REPORTS AS AN AID TO EXPORTERS.

American manufacturers desiring export trade will find much to interest them in "Commerce Reports," a daily publication issued by the United States government. Besides listing the opportunities for the sale of American goods in foreign markets, it gives a complete daily record of the requirements of the United States government, notices of current changes in the tariff and trade-mark laws of foreign countries, and other valuable information. This is a pamphlet of 20 or more pages, the cost of which is $2.50 per annum.

New Goods and Specialties.

"DE LUXE" RUBBER GOODS.

THE cuts below illustrate new items just added to one company's line of druggists' sundries. The larger cut shows a "De Luxe" combination water bottle and syringe, and also a fountain syringe, in the "Wearever" quality; on both of which patents have recently been granted. These articles are each



molded in one piece, being made of maroon rubber, with smooth surface. The syringe tubing is of extra large size, in hexagon design, and the four rapid flow pipes accompanying each syringe are threaded for screw attachment to the tube. The conversion of the hot water bottle into a syringe is effected through a combination cap.

The smaller illustration is of the new "Take-a-Part" ear and ulcer syringe, in the same class with which is also a new infant syringe. These are both made with maroon rubber bulbs and with detachable pipes, the former of soft red rubber, and the latter of flexible black rubber. [The Faultless Rubber Co., Ashland, Ohio.]

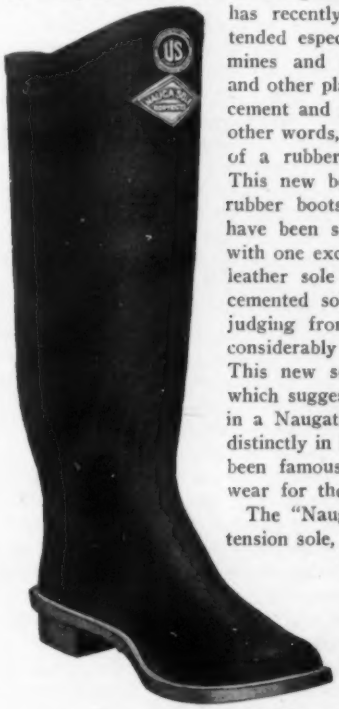
TOY BALLOONS.

Some new "Eclipse" brand rubber toy balloons are shown in the illustrations below. These balloons are of the squeaker variety and are made of high-grade rubber, in sizes from 16 to 60 inches in circumference when inflated. They are furnished with patent stoppers if desired, for inflation by means

of a bellows. In the "Dying Teddy Bear" class, the company makes also rabbits, chickens, donkeys, cats, etc. The oval balloon is made in various sizes and with a large mouthpiece. The baby squeaker comes in two sizes, either plain or in colors, the line—which includes all kinds of air balloons, squirts, etc.—being produced in an assortment of beautiful brilliant colorings. [The Rubber Novelties Co., Limited, Knott Mill, Manchester, England.]

A NEW RUBBER BOOT FOR SEVERE SERVICE.

What miners particularly want in rubber boots is the maximum of wear, comfort of course being assumed. A new rubber boot has recently come on the market intended especially for workers in iron mines and men employed in garages and other places where the floors are of cement and not particularly smooth; in other words, where the wear on the sole of a rubber boot is unusually hard. This new boot is quite similar to the rubber boots with leather soles which have been so popular for many years, with one exception—that in place of the leather sole there is a specially tough cemented sole which the makers say, judging from various tests made, will considerably outwear the leather sole. This new sole is called the "Nauga," which suggests that probably it is made in a Naugatuck factory. If so, that is distinctly in its favor, as Naugatuck has been famous for superior rubber footwear for the last 65 years.

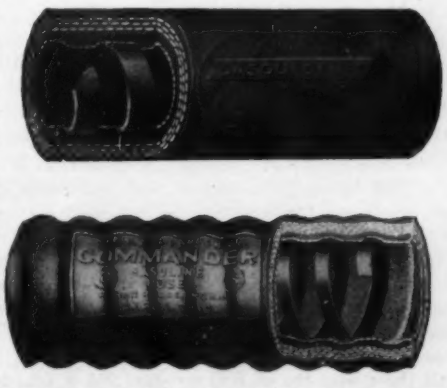


The "Nauga," by the way, is an extension sole, which saves the foot of the boot from any hard knocks. In color it is a chrome yellow. [United States Rubber Co., New York.]

A NEW GOODRICH GASOLENE HOSE.

The great trouble encountered in piping gasolene has been that the fluid dissolves rubber, causing disintegration and thereby allowing small particles of rubber to get into carbureters and cause engine trouble.

With the end in view of rectifying this trouble, a new gasolene hose has been put on the market. The inside rubber tube is protected from the gasolene by a very fine fabric, specially treated, which is held in place by a steel wire. The result is that no matter how much disintegration takes place, no particles of rubber, however small, can get into the gasolene. The wire is a flat steel spiral which covers approximately two-fifths of the surface of the fabric, and prevents kinking of the hose.



The hose comes in two styles, the "Commander" and the

"Goodrich." The latter has a smooth surface and its inner construction differs from that of the former in that the protecting wire is wider than that of the "Commander" brand, which has a corrugated surface. [The B. F. Goodrich Co., Akron, Ohio.]

ELASTIC FABRIC AS A WEIGHT REDUCER.

In certain directions it is quite probable that the use of elastic fabrics is not as general as it was formerly. For instance, whereas a few years ago practically every well balanced man wore suspenders as a necessary part of his equipment, a number of men, particularly those of athletic tendencies, now affect the belt in place of the suspender. But if on this account the consumption of elastic fabrics used in the manufacture of suspenders has decreased somewhat, this falling off is more than compensated for by increased uses in other directions, as, for instance, in the making of various articles for women's wear with the intention of reducing unnecessary avoirdupois. Of the three flesh-reducing garments here shown, durable woven elastic cloth, specially treated to withstand ordinary washing and perspiration, forms the front of the brassiere. The back is of fine batiste. The garment has adjustable shoulder-straps, fastens in front, and may be worn with or without corsets.

The abdominal belt is of strong elastic webbing, reinforced with duplex boning encased in strips of Coutil at the front, and adjusted by laces in back. The front width is nine inches.

The third cut shows a hip reducer made of elastic webbing woven with the fabric and fitting snugly. It is 12 inches in width, adjusted by laces in front, and has four hose supporters. [Bellas Hess & Co., New York.]

"FIRST AID" IODINE AMPUL.

This germ-proof container for tincture of iodine has at one end a rubber covering which connects the glass tube with a cotton brush. To use, break off the hermetically sealed end to admit the air, then break the glass inside the rubber covering by pressing down upon the rubber, thus allowing the iodine to flow through the cotton brush on the injury in need of cauterization. As tincture of iodine is highly evaporative, the rubber answers the double purpose of preventing evaporation and guiding the flow of iodine to the proper outlet. [H. K. Mulford Co., Philadephia.]

NEW GREASE GUN.

A new grease gun built to hold a gallon of grease and provided with a system for registering the amount discharged at any one time, is equipped with a special type of rubber hose for carrying the grease to the desired point. This hose was chosen for the purpose because of its ability to stand garage conditions. This grease gun is substantial in design, for hard garage use. [John J. Zwald, Emporium, Pennsylvania.]

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

A FEW RAINCOAT FEATURES.

The new coat illustrated combines all the latest style features of the dressy models with warmth and storm proof qualities, being made of heavy rubberized covert cloth. It is now on the market in the fashionable shades of gray and tan. It has a full skirt and raglan sleeves with button-trimmed cuffs. The collar may be worn rolled back in Quaker effect or turned up high around the neck. Such a coat with the collar turned up, and with pockets and vents for the hands—when worn in combination with a hat as illustrated, makes the carrying of an umbrella unnecessary. This hat is made in rubberized material in colors to match the coat, and with the brim turned down protects the face in the severest weather. [Bellas Hess & Co., New York.]

AMONG THE LATEST RIDING HABITS.

Latest showings include some new riding habits, of which two are here reproduced. Both are made of Oxford melton, and another point of similarity is the rubber facing in the coat skirts, one of which is turned back to show this rubber protection. Apart from these features and the breeches, they are dissimilar in style, one costume having a single breasted long coat, while the other, which is on sale at present only in brown, is a double breasted flare model. [Franklin Simon & Co., New York.]

A RAGLAN RAINCOAT.

The number of men who are accustomed to treat the umbrella with silent neglect, not to say with open disdain, and to look only for protection in times of storm to the raincoat, is constantly increasing. Here is a raincoat with a number of new features. It will be noticed by the illustration that it belongs to the raglan style and that it is single breasted without a fly front. The more novel features lie in the length and width of the lapels and also in the extra stitching at the cuffs and around the pocket flaps. This coat is made of tan colored cashmere, double texture, and guaranteed to be waterproof. It is also made with an extra full skirt. [A. G. Spalding & Bros., 520 Fifth avenue, New York.]

SIX NEW OUTING SHOES.

There is no other department of rubber footwear which has shown during the last few years such development and expansion as the manufacture of outing and tennis shoes.

VARSITY OXFORD.

RAMBLER OXFORD.

ROVER OXFORD.

The outing has become much more of an institution of late years than it was formerly. A considerable portion of the American public now devotes itself quite continuously to the outing, locating it during the summer months along the New England coast, and transferring it during the winter months to Florida, Southern California and other semi-tropical climes. It is quite natural, therefore, that the paraphernalia for those who give themselves over to outings should increase in extent and variety.

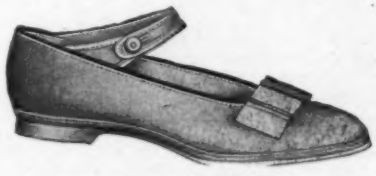
The latest catalogs of "outing shoes" show six new varieties not hitherto offered the public. Briefly described and illustrated they are as follows:

First is the "Varsity," a white duck shoe made with a welt and having a white rubber sole with wedge heel. This shoe is intended for both men and women and is made in both "Oxfords" and "Bals." The "Rambler" is quite similar to the "Varsity" in its general appearance and construction except that it has a full heel instead of a wedge heel. The "Rover" resembles the "Varsity," but is made only in misses' and children's sizes, and in order to please juvenile tastes, can be had in golden glow duck with red soles, if so desired.

Among the new outing shoes offered this fall are two "Veranda" pumps for women, one made of white duck and having white soles and black trimming, the other made of black duck with white soles and white trimming—these color effects being an obvious concession to the prevailing tastes at the present time for multi-colored footwear. Another "Veranda" pump for women is made of white duck and white rubber, with black trimming around the edge of the upper, and provided with a strap. A better idea of these various shoes can be obtained from the accompanying illustrations.

VERANDA PUMP BLACK DUCK WITH WHITE SOLE.

VERANDA PUMP WHITE DUCK WITH BLACK TRIMMING.



VERANDA PUMP WHITE DUCK WITH STRAP.

A new last has also been introduced this year in outing shoes for children, called the "Nature" last. The accompanying cut showing the forward half of one of these shoes, viewed from above, gives a very good idea of its natural lines and comfortableness. [United States Rubber Co., New York.]

NATURE LAST.

CORD TIRES FOR AEROPLANES.

Resiliency and security against "blow outs" are important factors in aeroplane tire building, while large tire section diameter is necessary to provide maximum cushioning qualities. The superior resiliency of cord tires has long been recognized, and the success achieved by tires of this type in automobile track races demonstrates the fact that they rarely "blow-out."

The illustration shows a new Goodyear aeroplane cord tire. It is the 26 x 4 regular clincher which contains from four to six cord layers, insuring extreme reinforcement. [The Goodyear Tire & Rubber Co., Akron, Ohio.]

THE "SKUDDER CAR."

An interesting new mechanical vehicle for children from 3 to 12 years old is called the "Skudder Car." It can be propelled at a speed of 10 miles per hour on smooth pavements by the rider. It is provided with ball bearings and solid rubber tires. [The Skudder Co., Straus Building, Chicago.]

EVERY MAN HIS OWN HAIR TRIMMER.

Every man who has entered a barber shop for the purpose of securing a plain and simple haircut and has been interrogated by the industrious barber as to whether he did not want in addition a shampoo, dry or wet; electric massage, an eyebrow trim and an alcohol rub will be glad to learn that if he so elects he can from now on trim his own hair in the quiet and solitude of his own home. An inventive genius, obviously a friend of all mankind, has devised a simple and inexpensive apparatus which enables the owner to do his own hair trimming when and where he will. It consists of a hard rubber comb to which safety blades are attached. These blades can be adjusted in such a way that the hair may be trimmed long or short, as desired, or one part of it trimmed long and the other part trimmed short. In addition to saving the time wasted while waiting for "Next!" this little instrument is obviously a saver of expense. [American Safety Hair Cutter Co., Pittsburgh, Pennsylvania.]

The Rubber Trade Association of New York Adopts New Rules.

THE following rules governing crude rubber contracts, recently adopted by The Rubber Trade Association of New York, constitute such an important step in the history of rubber importing as to be well worth reproducing in full.

RULES.

All sales by private treaty purporting to be made subject to the Rules of the Rubber Trade Association of New York, shall be considered as made subject to the following Rules:

STANDARD QUALITIES.

1. Plantation Standards consisting of *Hevea* Thick and Thin Pale Plantation Crêpe, *Hevea* First Latex Crêpe, *Hevea* Ribbed or Plain Smoked Sheets, Unsmoked Sheets and (or) Biscuits, to be as understood in London and (or) New York; Para Standards—To be as understood in New York.

INFERIOR QUALITY.

2. Where a parcel of rubber is sold under one of the standard descriptions for a specified shipment, arrival, delivery or on the spot and finally found inferior, buyer shall have the option of rejection and the quantity so rejected, whether the whole or any portion, shall not constitute a delivery on the contract. Should the time for delivery have expired the seller shall have three (3) clear working days to replace the quantity rejected provided that such quantity was, in the opinion of the arbitrators, a *bona fide* tender, otherwise Rule 11 to apply.

3. Where a parcel of rubber is sold with a description of quality other than specified in Rule 2, and upon delivery is found inferior, or any portion is found inferior, then the buyer must accept the same with an allowance, provided such allowance, in the opinion of the arbitrators, be not more than two cents (2c.) per pound or otherwise as may be specified in the contract; but should the parcel, or any portion tendered, be rejected the seller to have the option (provided that it was in the opinion of the arbitrators a *bona fide* tender) of substituting guaranteed quality on the spot to fulfill his contract within three (3) clear working days or the expiration of time for delivery as the case may be, otherwise Rule 11 to apply.

DELIVERY WEIGHTS.

4. The words "about" or "more or less," when used to define quantities contracted for, shall mean the nearest amount which sellers can fairly and reasonably deliver, but no excess or deficiency shall be greater than 2½ per cent. The word "ton" shall mean a ton of 2,240 pounds.

5. Final delivery on any contract to be within 100 pounds of the weight contracted for, but in any case the nearest weight of the contract quantity that the average weight of the packages of the final tender admits. But where it is found impossible to deliver within 100 pounds, taking the average weight of the packages tendered, any deficiency, or excess, shall be invoiced or invoiced back, as the case may be, at the market price on the date of delivery. Should buyer and seller fail to agree on the market valuation at such time same is to be fixed, without fee, by the arbitration committee.

6. Buyers shall have the option of rejecting any tender of less than 2,000 pounds, except in completion of a contract; but tenders of less than 2,000 pounds may be combined provided rubber so tendered is in the same neighborhood.

DECLARATION OF VESSELS.

7. After declaration should the vessel, or vessels, carrying any portion of a contract calling for shipment be lost, such contract is to be cancelled to the extent of the goods lost. Should the shipment not be declared by the seller prior to the loss of the vessel carrying the shipment, such loss shall not vitiate the contract or any part thereof.

PROMPT SHIPMENT.

8. The term "prompt shipment" from foreign ports shall, under normal conditions, be considered as follows: Within a period of fifteen (15) days if shipped from Great Britain or Europe, thirty (30) days if shipped from the Far East, thirty (30) days if shipped from the Amazon Valley.

TENDERS.

9. Plantation grades when tendered to the buyers shall be taken within three (3) clear working days; all other grades within two (2) clear working days. The tender to be received by the first buyer before 3.30 p. m. (11.30 a. m. on Saturdays), and the first and each subsequent buyer must pass same on with due despatch, but in any case within one (1) hour of receipt. Tenders received between 1 p. m. and 2 p. m. must be received by the next buyer before 3 p. m., but in no case later than 5 p. m. on the last working day of the period of delivery (1 p. m. on Saturdays). For the purpose of this rule a day is to be taken as commencing at 10 a. m. and ending 5 p. m. (Saturdays 1 p. m.). Any party failing to re-tender within the times specified as above becomes a first seller.

10. It shall be considered a proper tender when rubber is discharged from steamer and (or) ready for delivery.

DEFAULT.

11. Wherever it may be admitted by the seller, or decided by arbitration, that the seller has failed to fulfill the terms of the contract, the buyer shall close by invoicing back the rubber to the seller at once at a price and weight to be fixed by arbitration, which price shall not be less than 2 per cent. and not more than 10 per cent. over the estimated market value of the shipment contracted for on the day upon which the default occurs, the difference to be due in cash in ten (10) days.

EXAMINATION AND ACCEPTANCE.

12. Buyer shall be afforded full opportunity, by the seller, of examining rubber on the dock or at warehouse, and once delivery is taken it constitutes final acceptance. All risk after weighing for account of buyer. Delivery shall be considered completed after rubber has passed the weighmaster's scales and weights ex-dock or ex-warehouse to be final.

WEIGHING AND TARING.

13. Unless otherwise stated in the contract all tenders of plantation rubber or rubber in bales may be weighed in drafts at the option of the seller. Rubber shall be weighed gross to the 1 pound, if in drafts, and may be weighed to the ½ pound, if weighed by the package. Cases tared shall be weighed to the ½ pound. Paras shall be grossed and tared case by case to the 1 pound. All other grades of rubber which cannot be readily tared are to be billed at tares guaranteed by seller.

PLANTATION TARES.

14. Plantation tares shall be ascertained by taring 10 per cent. of each lot (but in no case less than 3 cases) and adjustment made on the basis of shrinkage or gain as compared with the marked tares. Weighmaster is to furnish weight returns or marked tares. Where no official weights or marked tares are available all cases are to be tared. If either party, buyer or seller, desires to have any quantity in excess of 10 per cent. of the delivery tared, it shall be at the expense of the party demanding same.

MONTHLY DELIVERY CONTRACTS.

15. Where a contract calls for monthly delivery or shipment, each month or specified part of a month's delivery or shipment is to be treated as a separate contract.

OPTION OF DELIVERIES.

16. Where rubber is sold for shipment from a foreign port, the seller may tender in fulfilment of the contract, rubber not coming from that port, provided it is of the same description and quality as the rubber named in the contract and is tendered according to the terms of the contract so far as the time and place of delivery are concerned.

ARBITRATION ON IDENTICAL CONTRACTS.

17. When the subject matter and terms of contracts are identical, or identical except as to date and price, all arbitrations shall be held as between first seller and last buyer as though they were contracting parties, and the award made in pursuance thereof, subject to the right of appeal to the committee of the association, shall be binding on all intermediate parties, providing that the terms of the contract have been fully fulfilled.

NOTIFICATION OF REJECTIONS.

18. If acceptance of any parcel of rubber is refused by a buyer, immediate notification must be given the seller, same to be supplemented in writing within 24 hours, stating specific reasons for such refusal.

SPECIAL AGREEMENTS.

19. Any special agreement expressed in a contract supersedes the rule to the extent said rule is affected thereby.

FORCE MAJEURE.

20. Should shipments or deliveries be prevented during the period stipulated in a contract by reason of war, riots, strikes, government embargoes or other force majeure causes, the time allowed for shipments or deliveries shall be extended until the operation of the causes preventing shipments or deliveries has ceased.

TERMS OF PAYMENT.

21. Terms of Payment: Cash on delivery less 10 days' interest at the rate of 6 per cent. per annum.

22. These rules shall govern all contracts made on or after July 15, 1915.

REMINISCENCES.

By a Veteran Rubber Factory Superintendent.

SOME years ago a rubber shoe manufacturing firm was troubled with blistered shoes. After they had tried every way they could think of to stop it I was asked to come and see if I could find the cause. Soon after my arrival I went into the compounding room, and running my hand down in the whiting box I found the whiting damp from a leaking steam pipe. The pipe was repaired and the blisters stopped.

At a large shoe factory I found the soling calender rolls running even motion, with a man behind each machine pushing the stock in to keep it off the floor. The machines were changed to slip motion and the men taken away. These machines had run wrong for 50 years.

This factory was making as high as 16 per cent. "seconds." In two months the proportion was reduced to one-quarter of 1 per cent. Then I was called in the office and told that customers were finding fault because they were not getting enough seconds. It had been the rule to put so many seconds in every case of first quality.

In fitting out a new factory the upper and soling calenders were placed in opposite position to that intended. The reason was to keep the men from getting caught in the rolls at the top; and I have always thought they turned out better work.

It has been a matter of wonder to me in going from one factory to another to find how tenaciously manufacturers hold to a wrong idea rather than have an outsider tell them of something better. It is false pride with many of them.

In one place they were boiling oil for varnish 30 days and nights, when the boiling was stopped and varnish made without boiling the oil. They figured that this had cost them a lot of money. One factory had the idea that all compounds must be tumbled about in a rolling barrel, without any thought about cleaning or taking out all the compounds. The barrel was finally put on the dump, and then the goods took on a better appearance.

When starting a new mill, a branch of another some miles away, I sent to the old factory for thermometers to test the heaters. Putting in a few shoes, the heat was run along regular lines, but I found the shoes were not vulcanized, so I tried again, and the same thing happened. I was puzzled. Filling a small kettle half full of sulphur I hung it alongside the thermometer. When the sulphur commences to melt the glass ought to stand about 240 degs., but it was 290 degs. Sending word to the manager of the other factory that the thermometers were out 50 degrees, he said they meant to tell me about it—that they were made so on purpose, to mislead the inquisitive. The secrets in rubber mills are not so many as supposed.

In these progressive days, with the many chemists employed, I suppose nothing can go wrong. But good horse sense goes a long way, and sometimes fools the chemist. I have known it to do so many times. After all there is nothing as good as a strong thumb-nail.

As I think of the many experiences during forty or more years in rubber mills I wonder if those engaged in the business today are having troubles of their own.

In all the years I was engaged in the rubber business the one thought uppermost in the mind of the management was that the opposition was doing better work at less cost; that the other factory was more up-to-date, and that if they could get the secret they would be better able to compete.

It occasionally happened that I went with some of these competitors. One instance is most prominent in my mind. For several years I had heard about the wonderful shoes this concern was making, the brilliant luster of the varnish, the up-to-date styles; in fact the praises were sung on about everything connected with the boots and shoes of this company.

Now, what was the truth? Three months after leaving this factory I was superintendent of the other. When talking with the manager about taking the position, he said that for many years they had ignored the shoes of the first firm as of no account, and that they cut no figure in the market, but now their customers were asking why they did not turn out as good shoes. He also said that on examination he found them superior to their own. In one month after I joined the new plant about every formula was changed to a cheaper and better, with the cost cut in two in many cases, and the number of formulae cut from 80 to 20. The ticket had been going down for some time. It immediately went from 8,000 to 16,000 pairs a day.

My experience in different factories teaches me that most of them carry altogether too much mixed stock, considering the money invested, the room it takes, deterioration, liability to contamination, etc. Does anyone believe that he gets the same results from materials after lying for weeks in the stockroom that he gets when they are first mixed? I am not a believer in throwing stock from mixing mill into calender, but I have found stock better after two or three days.

In taking charge of a small factory I found several tons of mixed stock, also a good-sized building full of clippings and other cloth scraps. In a few months this was all utilized in the factory, not one pound wasted, and this factory—which had just kept its head above water for three years—made 150 per cent. the first year.

My way was to compound up or down as required to make a stock suitable for a desired purpose, instead of mixing new stock and probably having some to put away. A good deal of the above applies only to those who do a general rubber business.

In one place I found many dollars' worth of varnish in barrels and cans lying about the yard and out-buildings. The varnish had been made at different times, each maker thinking he knew the trick but having failed. Some made it with blown oil after Weber's formula, some with Baltic oil, Calcutta or any old oil that came to hand. This was all *reclaimed* (excuse me for using this word), and every gill of it used in the regular way, and came out all right.

This reminds me of a man who at one time was well known to the trade. When he first came under my notice he was running a factory making tan shoes vulcanized with steam heat. These I understood found their way back to the factory. Afterwards he had a small experimental shop back of his house. One day he came to the factory where I was employed, and as I had visited him at his home I did my best to show him everything of interest in the factory. When he was passing out the office door he remarked that it was wonderful. I asked him just what he meant. Why, he said, it was wonderful how well my employer had got along for one who knew so little.

Which shows how little effect failure has in taking the conceit out of a man.

"Rubber Machinery," Mr. Pearson's newest book, filled with valuable information for rubber manufacturers, is now ready for mailing. Price, $6.

New Machines and Appliances.

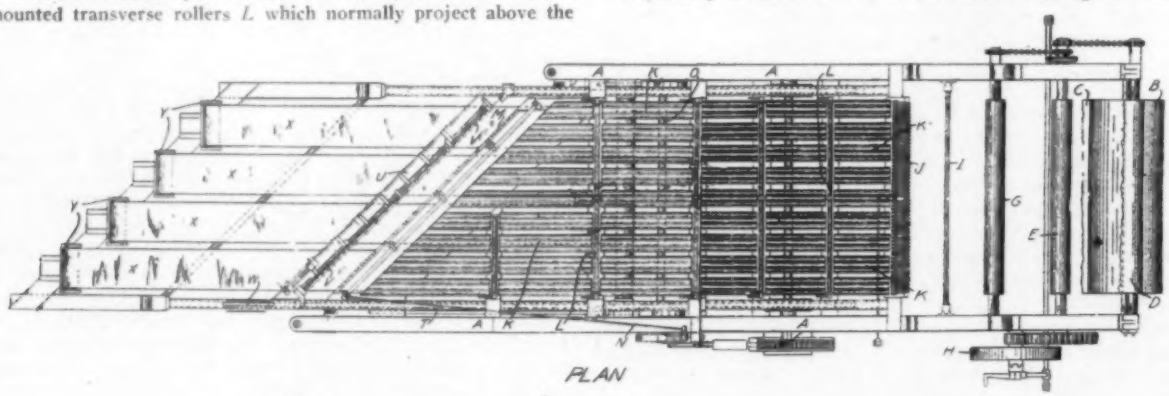
A NEW BIAS CUTTING MACHINE.

GORDON'S invention relates to an improvement in bias-cutting machines and particularly to those machines adapted for cutting very wide sheets of rubber cloth.

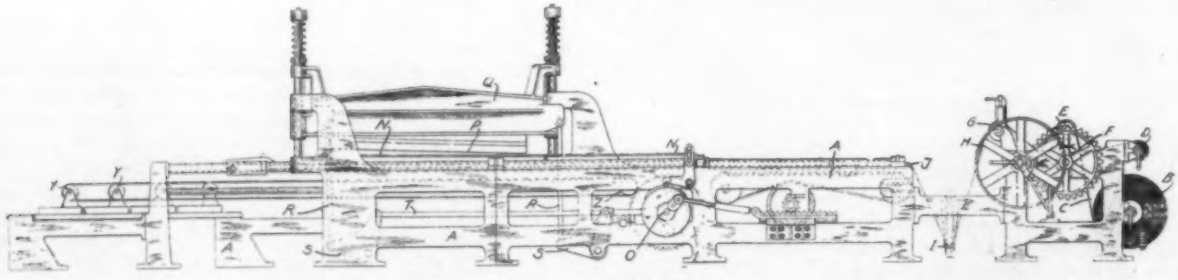
Referring to the illustration, in which like letters indicate like parts in both drawings—*A* designates the side frames, *B* the roll of frictioned fabric, *C* the fabric, and *D* the liner roller. The fabric is passed over roller *E*, down and around roller *F*, and over roller *G*, all being positively driven from the belt pulley *H* by spur and chain gearing.

From the roller *G* the fabric passes down and under a weighted roller *I* and then over the fabric guide *J* to the table. The guide *J* consists of bent fingers, one set inclined to the right and the other toward the left. Their forward ends are connected with a slide operated by a hand rod by which the fingers are adjusted.

The surface of the table is formed by a series of ribbed plates *K* which are interrupted at intervals by spaces in which are mounted transverse rollers *L* which normally project above the plane of the table. These rollers are mounted so that they can be dropped below the plane of the table.



PLAN



SIDE ELEVATION

At the forward end of the table is a lower knife *M* which extends diagonally across the frame at an angle of 45 degrees. Above this knife is a transverse plate that is raised and lowered by rod *N*, a bell-crank lever, and a cam, driven from the main shaft *O*. Above the plate is a strip of card cloth beneath which the fabric passes and which prevents the fabric from creeping backwards while permitting it to be drawn forward. Co-acting with the lower shear *M* is a movable upper shear *P*, which is fixed to the bridge *Q*. The bridge and shear are raised by vertical rods *R*, *R*, connected to bell crank levers *S*, *S*. The front lever *S* is connected by the rod *T* to a lever that is rocked by an eccentric attached to the main shaft *O*. The opposite lever *S* is connected by a short rod to a similar lever and eccentric on the same shaft so that the movement imparted to the rods *R*, *R* is the same and the bridge is lifted evenly. The cutting is done by the downward stroke of the bridge and shear.

In front of the table is a carriage *U*, projecting beyond the rear edge of which is a series of lower gripper fingers arranged in line, with clearance notches. Co-acting with these lower fingers is a corresponding series of upper fingers or grippers *V* which are connected with a rock shaft mounted in bearings on the ends of the carriage. Secured to the rock shaft is a series of rearwardly extending arms beneath which springs are placed to force the grippers together. As the carriage moves toward the cutters, the grippers are open, but when the grippers have passed on the raising plate they are released by a lug striking a stop which closes the grippers, just as the fingers enter the notches in the raising-plate and while the bridge is raised. The grippers come together to grip the edge of the fabric which has been lifted from the lower knife by the raising plate, the edge of the fabric being in line with and caught by the grippers.

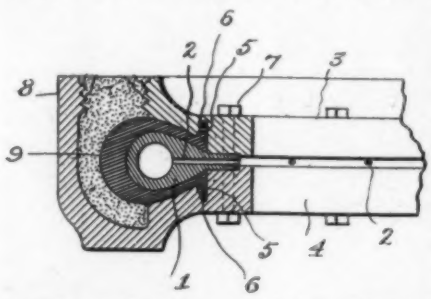
Adjustably mounted on one of the tubular bearings is a cam *W* which determines the extent to which the fabric is drawn forward before the cutting takes place, and on the end of the rock-shaft is an arm which engages with this cam to open the gripper fingers. As the carriage moves forward the grippers are opened and the strip of fabric released, the machine being timed so that the cutter descends when the carriage reaches the limit of its forward movement. The severed portion of the fabric drops on aprons *X* driven from a roller and running over adjustable rollers *Y* at the forward end of the machine.

With this machine the fabric is drawn on the table and spread out flat and any tendency to creep to one side is overcome by the warp fingers. If the fabric creeps to one side or the other, by manipulating the fingers which spread the fabric toward opposite sides its course may be properly directed through the machine. [William A. Gordon, assignor to Birmingham Iron Foundry, United States patent No. 1,148,162.]

ADAMSON'S TREAD MOLD.

Tire treads are usually vulcanized either in two-part molds or wrapped with strips of cotton cloth. In the former method the gases in the compound are sometimes trapped, causing blisters; while cloth wrapping is expensive.

Adamson's mold provides a support of powdered soapstone or molder's sand, which surrounds the tread surface of the casing and holds it in shape while the gases are free to escape.



Referring to the drawing, 1 is a metal core on which the casing is built up, and which is hollow to permit access of steam through openings *2*. The upper and lower mold sections *3* and *4* respectively have channels *5*, which form the beads *6*, the sections being clamped together by bolts *7*. The lower mold section *4* is extended annularly at *8*, forming a circular channel that surrounds the tread surface *9*.

In practice the built-up tire shoe is placed between the sections *3* and *4*, which are then clamped together. This shapes the beads as well as the body of the shoe in the usual manner. The pocket formed by the extensions of the molds is then filled with molder's sand, which is tamped, in the usual manner, and brought flush with the upper edges of the extensions, when the mold is ready for the vulcanizer. The sand surrounding the tread surface of the shoe will maintain the rubber stock—softened by the rise in temperature—against movement, while it also permits the escape of any gases liberated in the rubber. [C. F. Adamson, assignor to United States Rubber Co., United States Patent No. 1,150,922.]

OTHER INVENTIONS.

Raymond B. Price has recently been granted five patents covering processes of vulcanization and methods of making rubber thread and other vulcanized products. Brief descriptions follow:

VULCANIZATION WITH A FLUID MEDIUM.—Tires, hose, boots, and shoes are vulcanized in a bath of calcium chloride or other heat transmitting mediums of a fluid nature under the vulcanizing temperature. [United States patent No. 1,152,834.]

VULCANIZATION WITH A FLUID MEDIUM UNDER PRESSURE.—The article to be vulcanized is surrounded with a heating medium and the latter subjected to pressure. [United States patent No. 1,152,835.]

VULCANIZING FABRIC AND RUBBER.—A layer or layers of fabric are interposed between layers of rubber such as in hose or tires. The fabric layer is first subjected to fluid pressure and then a greater pressure is applied to the exterior rubber layers. This removes the moisture and compacts the layers of fabric and rubber. [United States patent No. 1,152,836.]

WARMING, PRE-HEATING, AND VULCANIZING PROCESS.—Boots and shoes are treated to a preliminary warming at or under atmospheric pressure, then to a pre-heating at a temperature above the curing heat and at a pressure above, at, or below atmosphere, and finally they are vulcanized. [United States patent No. 1,152,837.]

MAKING RUBBER THREAD.—A number of superimposed layers of rubber sheet are coated with a medium, such as glycerine, that is liquid at the vulcanizing temperature and the pile is then vulcanized. The coating of glycerine prevents the layers from adhering so that they can be separated after vulcanizing. [United States patent No. 1,152,838.]

DRYING APPARATUS FOR RUBBER-COATED FABRICS WITH RECOVERY OF THE BENZINE.—The air space above or surrounding a proofed fabric from which solvent is being evaporated is completely enclosed, and facilities are provided for inspecting the fabric after passing the spreading knife. The vapor of the solvent is recovered in a closed system in which the vapor-laden air is drawn by a fan from the drying chamber through two refrigerators for condensation; the residual air being reheated and passing again into the drying chamber. [E. Bataille, French patent No. 474,003—1914.]

A NEW WATERPROOF FABRIC AND PROCESS OF MANUFACTURE.—The inventor uses loose staple cotton, hair or threads distributed in thin layers, the fibers of one or more layers being angularly disposed to the fibers of the adjacent layers. When a sufficient number of layers have been piled together they are submerged in a solution of rubber. After the excess rubber has been pressed out the material is sheeted.

The claim is made that tires made up of this material are non-skid and puncture proof, and that rubber heels of the material wear longer and will not slip on wet pavements. [Hadwen Swain, United States patent No. 1,152,349.]

MANUFACTURE OF SEAMLESS GOODS.—Gloves, nipples, finger cots, tobacco pouches, etc., are made by dipping. A recent invention covers a process which consists in dipping and vulcanizing separately each successive layer of rubber. The layers may be of different rubbers and consistency, and in making gloves, nipples and finger cots the bead at the open end is formed before curing by rolling up the layers. [Thomas W. Miller, assignor to The Faultless Rubber Co., United States patent No. 1,152,372.]

THE GARDNER VALVE PACKING GRINDER.

Hard rubber valves must be accurately finished to be serviceable—that is, the two opposite sides of the ring should be ground flat and parallel to within two thousandths of an inch. Also rings of the same size should not vary in thickness more than five thousandths of an inch.

The Gardner machine is used for grinding at the same time two parallel sides of a valve or ring. The two abrasive discs are mounted on oppositely placed heads driven by independent belts. The right hand head is fixed and the one on the left is moved laterally by a rack and gear operated by a hand or foot lever. A micrometer stop-screw, graduated in thousandths of an inch, regulates the forward travel of the head so that duplicate work can be finished accurately.

In the illustration the grinder is shown in operation, finishing, one at a time, valves of six different sizes. These are clamped in a simple wooden holder and held between the revolving discs by the right hand of the operator. The movable head and grinding disc is brought up against the valve by a lever operated by the left hand of the operator.

With the larger valve rings, a roughing cut is first made with coarse discs to bring the ring down to within 12 thousandths of finished size. Finer discs are then substituted and the finishing cut made bringing the valves down to size. The output is 600 to 625 of the small valves per hour, as only one cut is required, and 350 to 370 of the larger valves per hour, as two cuts are required. [Gardner Machine Co., Beloit, Wisconsin.]

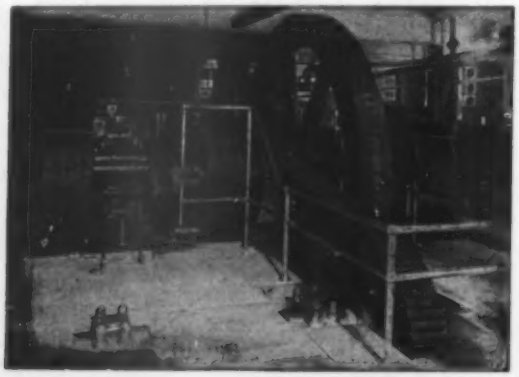
THE SILENT CHAIN DRIVE.

The introduction of electric drives in the most progressive rubber mills has greatly changed the appearance of factory interiors. The unsightly line and countershafts with whirling pulleys and flying belts are gone. While this is primarily due to the motor drive, it is the application of the chain drive that makes this transformation complete.

The silent chain consists of stamped links pivoted together forming a multiple chain that is as flexible as a belt and as positive as a gear. Both the drive and driven gears are accurately cut to fit the chain. Transmission service in rubber mills is very severe. As a matter of fact gearing has heretofore been used almost exclusively, but the repair and maintenance costs due to the gears transmitting shock, have in many cases caused the substitution of chain drives.

For heavy intermittent service, such as driving washers, mixers or grinders, where the load often varies from 25 per cent. to 150 per cent. within a few seconds, the chain drive is very satisfactory. When applied to calenders the driving force is positive but elastic and is equal at each instant to the uneven load usually carried by these machines. The chain drive is particularly well fitted for driving textile machinery, such as hose braiders, looms and special tire fabric machines. The smooth drive and even turning of rotating parts result in fewer broken threads. It is peculiarly fitted for the operation of air compressors, positive pressure blowers, and similar machinery, and for driving ventilating and heating fans. The silent chain permits of compact construction and requires but a minimum of attention.

The service cost per horse-power of a chain drive is probably lower than any gear, rope or belt transmission, tests on small



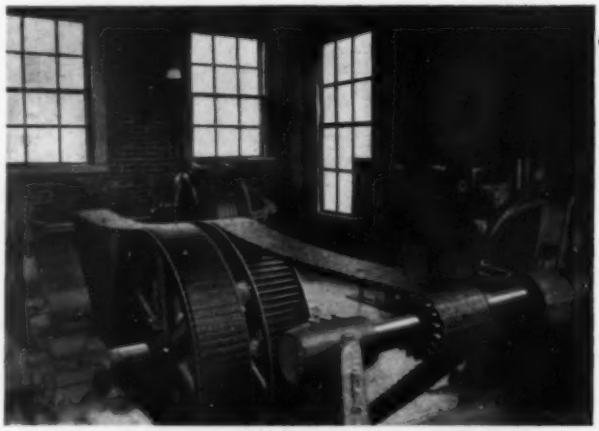
1,000-H. P. and 500-H. P. Morse Silent Chain Drives, Operating Two Line Shafts in a Large Rubber Mill. Size of Chains: 3-Inch Pitch x 24 Inches Wide and 3-Inch Pitch x 12 Inches Wide, Respectively.

powers having shown that this efficiency runs from 98½ to 99 per cent.

The following comparison is a good example of the greater compactness of this modern power transmission.

Rope drive—1,200 horse-power, 240 to 80 r. p. m., 42 ft. centers; diameter of driving sheave, 6 ft. 4½ in.; diameter of driven sheave, 20 ft.; 30 ropes, each 1¼ in. in diameter—price, including balance wheel weighing 120,000 lbs., $6,900.

Chain drive—1,200 horse-power drive, 240 to 80 r. p. m., 100 in. centers; one 31-tooth sprocket, driver 30.21 in. diameter; one 93-tooth sprocket, driven 89.42 in. diameter; 33.5 ft., 27 in. x 31 in. silent chain—price, not including balance wheel, $3,748.75.



Two 200-H. P. Link-Belt Silent Chain Drives. Operating Line Shafts for Rubber Mills. Size of Chain: 2-Inch Pitch by 12-Inch Wide.

The chain drive is now used to transmit power to many rubber machines. A total of over 33,000 horse-power in service in rubber mills shows the popularity of this type of power transmission.

A NEW STITCHER.

The hand stitcher is not only a very simple tool, but is an extremely useful one. In fact it is almost indispensable in the manufacture of certain goods; for instance, in rolling down the fabric strips and making smooth joints in tire building. The usefulness of this tool has greatly increased recently, and has resulted in the development of an improved ball bearing stitcher, which is made by the Hoggson & Pettis Mfg. Co., New Haven, Connecticut.

A NEW HOSE COUPLING.

This device does away with hose clamps, straps and couplings that require special fastening tools when attaching hose to a threaded terminal. The end of the hose is slipped into the corrugated end of the socket, which is then screwed on

the threaded sleeve. This is provided with a long taper which expands the hose against the corrugated socket, holding it in a positive grip. No special tools are required to make or break the connection, as ordinary wrenches are sufficient for the purpose. [The National Hose Coupling Co., Peoples Gas Building, Chicago.]

In the August number of The India Rubber World there was shown a very interesting "permanent set" testing machine used in the laboratory of the New York Insulated Wire Co. The invention was credited to M. M. Kahn, of the laboratory staff, but Mr. Kahn writes us that it was not his invention and we therefore gladly correct the error.

The Obituary Record.

A. G. SPALDING.

While Albert G. Spalding, who died September 9 at his home in Point Loma, Southern California, after a brief illness of ten days, had been a rubber manufacturer for many years, he had been prominent in many other relations and probably was most widely known through his association with athletics in this country, and especially through his connection with the "national game" of baseball. He was a man of marked versatility and was eminently successful, in his younger days in sports, and in his maturer years in mercantile and manufacturing pursuits, while he barely missed conspicuous success in politics.

A. G. SPALDING.

Mr. Spalding was born in Byron, Illinois, September 2, 1850. He came of excellent American lineage, his first ancestor in this country being Edward Spalding, who settled in Massachusetts in 1630.

Young Spalding left school at the age of 15 to become a grocer's clerk at a salary of $5 per week. His remarkable skill in the game of baseball, then beginning to gain wide popularity through the country, soon weaned him away, however, from weighing sugar and delivering sacks of flour. He held the position of pitcher on several local nines, though still giving the major part of his time to more serious mercantile affairs. But in 1871 he was offered the position of pitcher on the Boston "Red Stockings"—the most famous ball team of its day—and he pitched that team to a championship four years in succession; in '76 going to the Chicago National team, which in turn became the champion nine because of his extraordinary work in the box. He remained with the Chicago club only two years, when he retired as an active player, though he remained as manager and secretary.

In the meantime, in '76, with his brother, James W. Spalding, he founded the house of A. G. Spalding & Bro., a firm that grew with great rapidity, establishing branches in all the chief cities of the United States and in Europe and becoming famous all over the world. In connection with the distributing business carried on by this firm a factory was started a number of years ago at Chicopee, Massachusetts, for the manufacture of baseballs, tennis balls and, later, of golf balls.

Mr. Spalding, notwithstanding his large mercantile interests, could not entirely divorce himself from the national game. In 1881 he became president of the Chicago National Club and seven years later, carrying out a plan which he had long entertained in his mind, he took the Chicago team and another, called the "All-Americans," on a tour around the world. As baseball was an unknown game to many of the people in Europe and farther east, this tour of the two famous American nines created a decided sensation. He retired from active baseball management in 1891.

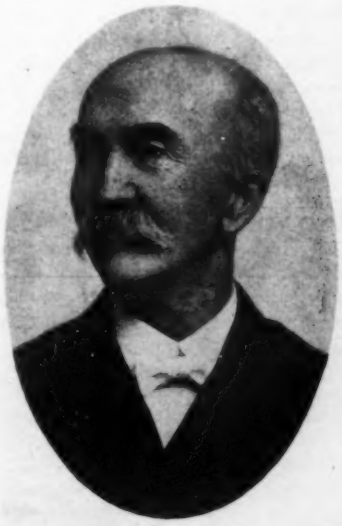
In 1899 Mr. Spalding brought about the merger of 150 bicycle manufacturing companies into the American Bicycle Co., of which he was the first president. In 1900 he became a resident of Point Loma, California, and a member of the Theosophical colony of that place. In 1910, when the first election was held in California under the primary law which had just been passed, he was persuaded by his friends to enter the contest for United States senator. He carried 75 out of 130 legislative districts, but, notwithstanding that fact, the legislature declared for another candidate.

Mr. Spalding was married twice, his first wife being Miss Sarah J. Keith, of Campello, Massachusetts, who died in 1899. His second wife was Mrs. Elizabeth Churchill Mayer, of Point Loma, who with two sons, Albert G. Spalding, Jr., and Keith Spalding, and an adopted son, Durand Churchill, survives him.

MILTON T. BAILEY.

Milton T. Bailey, for the last 28 years connected with the Apsley Rubber Co. and for a number of years past its secretary, died September 11 at the Massachusetts General Hospital, Boston, after an illness of several weeks.

Mr. Bailey left his home in Hudson August 3 to go to his summer home in West Southport, Maine. He was taken ill immediately on reaching that place. For two weeks his condition was considered very serious, but during the third week he seemed to improve and on September 9 started for home. The trip from the Maine coast to Boston proved to be exceptionally rough and Mr. Bailey suffered several heart attacks. On reaching Boston he was taken to the hospital, where he died the next morning.



M. T. BAILEY.

Mr. Bailey was born in Milan, Ohio, May 8, 1843. He went to school in Pennsylvania and though still under age at the time of the Civil War enlisted as a sergeant with the 143rd Pennsylvania Infantry. He saw the hardest imaginable service, going through the horrors of both Libby and Andersonville prisons. At the conclusion of the war he became a bookkeeper for William Apsley in Pennsylvania and in '87 transferred his services to the Apsley Rubber Co., Hudson, Massachusetts, first being a bookkeeper, later financial manager, and during the last ten or twelve years of his life, the secretary of that corporation.

He was a man of the greatest conscientiousness and was highly regarded by all his associates. In addition to his business duties, which were engrossing, he found time for many local interests. He was a member of the G. A. R., of the Odd

Fellows, president of the Anti-Saloon League of his town, prominent in the work of securing a public library for Hudson, and the founder of the First Congregational Church of that place, holding important offices in it for many years. During the funeral services, which were held in the Congregational Church, the flag on the Apsley factory and the flag on the Town Hall were at half mast.

EVERETT G. EBERHART.

Everett G. Eberhart, vice-president and general manager of the Mishawaka Woolen Manufacturing Co., Mishawaka, Indiana, died August 17 in his forty-eighth year, having been born in Mishawaka March 19, 1868.

He was the youngest son of Adolphus Eberhart, who, with the late M. B. Beiger, organized the Mishawaka company for the manufacture of the all-knit boot, which they originated. After his graduation from the high school of his native town in 1887, Mr. Eberhart immediately entered his father's factory and worked in various departments so as to acquire a general knowledge of the industry. Later he was transferred to the office, and in 1903 was made vice-president and general manager, positions which he occupied until his death.

During the 28 years of Mr. Eberhart's connection with the Mishawaka company it increased from a small organization of 200 employees making a yearly product of $500,000 in value, to a large corporation employing 2,700 people and producing a yearly output to the value of $10,000,000. And it is the consensus of opinion among Mr. Eberhart's associates that this pronounced success was in no small measure due to his sound judgment and initiative.

WILLIAM R. POPE.

William Ripley Pope, electrical engineer of the National Conduit & Cable Co., of Hastings, New York, died at his home in that village September 16 of apoplexy. Mr. Pope was born September 9, 1856, at Lake Roland, Maryland. He came to New York in 1889, and had been connected with the Cable company for a number of years. He was for twelve years one of the village trustees of Hastings and was the founder of the Hastings Building & Loan Association. He is survived by his wife and a daughter, Mrs. George E. Townsend.

MATTHEW HAMILTON GRAY.

Matthew Hamilton Gray, formerly engineer-in-chief of the India Rubber, Gutta Percha & Telegraph Works, Limited, Silvertown, London, England, passed away at Glenquaich, Perthshire, Scotland, September 2, at the age of 61 years, having been born in June, 1854, at Glasgow, Scotland.

Mr. Gray was a brother of Robert Kaye Gray, the late managing director of the Silvertown works, and a member of one of the most famous families in the telegraph, electrical and rubber industries. He was educated to be a mining engineer and to perfect his knowledge he traveled around the world, visiting the United States, South America and the Far East. He returned to England and, following his father's advice, entered the services of the Silvertown works in the capacity of assistant engineer. He played an important part in the laying of cables in Mexico, Central and South America, and from England to Spain. He managed the laying of the Spanish National Cable from Cadiz to the Canaries, and he connected Brazil with Africa.

He retired from the active service of the Silvertown works about seven years ago, but up to his death he continued to interest himself in the various operations of that company.

MRS. CHARLES H. ARNOLD.

For more than thirty years, Charles H. Arnold has been a prominent figure in the rubber trade. Not only is he well known, but many have visited his fine estate in Stoneham and met its capable and womanly mistress. To all such the news of her sudden death will come as a great shock. For the bereaved husband and sons, whose loss is unmeasurable, the deepest sympathy is extended.

NOTES OF THE TIRE TRADE.

TIRES AT THE TWIN CITIES MOTOR RACES.

Though the day was hot there was little tire trouble at the 500-mile speedway race held at Fort Snelling, Minnesota, Septemper 4. The outside rear tires suffered most from the strain of the race. This is the case in all track races, and it is due to the fact that the outside of the track is always roughest, and that at the turns a great portion of the weight of the cars is thrown on the rear outside wheel. The six cars that finished the race made eighteen tire changes, showing the average tire life in the race to be about 170 miles. The winning Stutz cars used Silvertown cord tires. Tire blow-outs caused the destruction of 11 wheels, of which ten were rear wheels. A few treads were thrown.

A curious feature of the race was that the two winning cars ran neck and neck practically throughout the whole race and one, the winner, changed six tires, whereas the other, which made practically the same average speed, only made three changes.

During the fiscal year ending June 30, 1915, the United States exported automobile tires to the value of $4,963,270, as compared with $3,505,267 during the previous fiscal year, showing an increase of $1,458,003.

THE PERLMAN RIM PATENT SUSTAINED.

The United States District Court for the Southern District of New York has sustained United States patent No. 1,052,270, issued February 4, 1913, to Louis H. Perlman, of New York, and has issued an injunction against the Standard Welding Co., of Cleveland, Ohio. The court further ordered that an accounting be made of the profits, which the defendant company derived from the infringement of the Perlman patent. The demountable rim, subject of the patent sustained by this decision, was perfected by its inventor as far back as 1903. It is supported on a small amount of surface and is capable of ready application and removal, and yet is firmly locked on the fixed rim when in use.

LARGER TIRES.

Most of the 1916 models of American built automobiles selling at prices above $750 are provided with what were formerly known as oversize tires. This makes ample provision for the overloading motor cars are so often subjected to.

A METAL CORD TIRE.

The popular cord tire is receiving a good deal of attention these days and inventors are striving diligently to produce a better or even as good an article, without actually infringing on the original patents. Instead of cotton cords, Mr. Miller, of the Anderson Rubber Works, uses wires that are twisted and wound with friction tape, forming metallic cables.

The tire is built up in the following manner: A strip of friction fabric is first placed on the core. Over this is placed a strip of rubber stock and then a layer of metallic cables is laid diagonally across the core. On this layer is placed another strip of rubber stock and then another layer of metallic cables is laid diagonally and at an opposite angle to the first; then another strip of rubber stock and a strip of frictioned fabric that extends from bead to bead; and finally the breaker strip and tread are applied. This tire is said to be blow-out strip and tread are applied. [Charles E. Miller, Anderson, Indiana.]

News of the American Rubber Trade.

PICHER LEAD CO. INCREASES CAPITAL TO FIVE MILLIONS.

THE original capitalization of the Picher Lead Co. was $100,000, but the assets of the company have increased until their value is approximately $4,500,000. Consequently the stockholders of the company at a meeting held on September 1, in order to bring the capitalization more nearly into uniformity with the company's real assets, voted to increase the capital stock to $5,000,000. The corporation still remains a Missouri company.

Of the increased stock all but $1,000,000 was subscribed and taken by the old stockholders of the corporation, the remainder being held by the company as treasury stock.

DEVELOPMENT OF THE FISK RUBBER CO.

This company began manufacturing operations 17 years ago, starting with bicycle tires. Its progress has been rapid. Today it gives employment to about 3,000 people, with a weekly payroll of $48,000. The principal product is the Fisk pneumatic tire. The capacity of the plant is 5,000 tires daily and this output is now being realized, and makes the Fisk Company an important factor in tire production. In addition to its large automobile tire output the company also manufactures many bicycle tires and a full line of tire repair accessories.

UNITED MALAYSIAN RUBBER CO. NOT AFFECTED.

A recent issue of the "Sarawak Gazette" published in Sarawak, Borneo, contained a letter written by the Rajah of Sarawak, stating that the United Malaysian Rubber Co., Limited, in London, had been notified that its Jelutong concessions in the Sarawak territory had been cancelled and that all the rights under that concession had ceased.

But when the officials of the company at the New York office were questioned about the matter, they made the following statement: "It is quite true that these concessions have been cancelled, but in the form in which they were interpreted by the Sarawak Government they have been of no use to us, so the cancellation of them does not affect our operations. Our plant at Goebilt is still in operation and will continue. There is no intention of liquidating the company."

RUBBER WORKERS GET SALARY INCREASE.

The Manhattan Rubber Manufacturing Co., of Passaic, New Jersey, posted notices on September 16 to the effect that all employees with the concern from six months to two years would receive a 3 per cent. increase in salaries; those who had worked from two to five years, 5 per cent., and all over five years a 7 per cent. increase. The company employs about 750 hands.

RUBBER COMPANY DIVIDENDS.

The Firestone Tire & Rubber Co., of Akron, Ohio, has declared an extra dividend of 4 per cent. on its common stock, payable October 15.

The Republic Rubber Co., of Youngstown, Ohio, paid on September 1 a dividend of 1¼ per cent. on its preferred stock.

Early in September the Canadian Consolidated Rubber Co., Limited, of Montreal, Canada, declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable September 30, to stock of record September 18.

The Rubber Goods Manufacturing Co. of New Jersey paid, September 15, its sixty-sixth regular quarterly dividend of 1¾ per cent. on the preferred stock to stockholders of record September 13.

SEMI-ANNUAL UNITED STATES RUBBER REPORTS.

Complying with a request made by a number of their stockholders, the directors of the United States Rubber Co. have voted to issue semi-annual reports of the company's condition. A request had been made for quarterly reports, but the directors did not think this advisable owing to the very considerable expense involved.

THE SOMERSET RUBBER RECLAIMING WORKS.

The Harmer Rubber Reclaiming Works, of East Millstone, New Jersey, changed their name, October 1, to the Somerset Rubber Reclaiming Works and their headquarters from East Millstone to New Bruswick, New Jersey. There will be no change in the management or the officers, I. Laurie remaining president and A. Marcus secretary and treasurer. The office was moved to New Brunswick, as that city has much better postal facilities than its neighbor, East Millstone.

MR. FORD HAS NOT BOUGHT CONTROL OF THE GOODRICH CO.

Mr. Henry Ford has been very much in the public eye of late and has been extremely active in various directions, but in one respect the rumors of his activities are not well grounded. The report was circulated that he had bought control of The B. F. Goodrich Co. This is most emphatically denied. Mr. Raymond, vice-president of that company, in speaking of this rumor says:

"The B. F. Goodrich Co. has $60,000,000 of common stock outstanding. To secure control of this class of stock it would be necessary to purchase over $30,000,000 in the open market. Nowhere near this amount has changed hands recently. Furthermore, I feel that if Mr. Ford desired to secure control of the Goodrich company he is the sort of man who would come to us and deal directly with us. Control of the Goodrich company is now in the same hands as at the time of its formation—by that I mean it is in the hands of the Goodrich family, with Mr. Work and others who were the prior holders of control."

TWO RUBBER MEN ON SECRETARY DANIELS' BOARD.

Among the twenty-two men representing eleven different scientific associations appointed, September 12, by Secretary Daniels as members of the Naval Advisory Board, there are two men well known to the rubber trade. One is Thomas Robins, of Stamford, Connecticut, who is one of the representatives of the Inventor's Guild. Mr. Robins has been associated with the development of the conveyor belt for the last quarter century. In fact, if one should refer to the back files of THE INDIA RUBBER WORLD, he would find in the May issue of 1896, a three-page article on rubber conveyor belts and their use by Mr. Robins, which told about all there was to say at that time on this subject. He is the author of many useful inventions connected with belt conveying, and he is president of the Robins Conveying Belt Co. of New York.

The other rubber representative selected by Secretary Daniels, is Dr. L. H. Baekeland of Yonkers, New York, who was nominated as one of the two representatives of the American Chemical Society. Though Dr. Baekeland was born in Belgium, he has resided in this country for many years and has become famous by his invention of substitutes for hard rubber, notably, "Bakelite" and "Condensite." Outside of the rubber trade, he is known as the inventor of the photographic paper called "Velox." He has held many important positions in scientific societies and has read many notable papers before scientific bodies.

SENATOR COLT DELIVERS A NOTABLE ADDRESS.

SENATOR LE BARON C. COLT, brother of Col. S. P. Colt, president of the United States Rubber Co., delivered an address at the Rhode Island Fair held at Kingston in that State, September 16, which has received much attention from the press of New England. It was an admirable interpretation of the general feeling now pervading the whole country regarding the maintenance of peace coincident with a thorough preparation for war.

The senator, naturally, from his long years on the bench, takes a judicial view of all questions, and he believes that international disputes are quite as susceptible of peaceful settlement as disputes between individuals; and in substantiation of this view he cited the century of peaceful solution of all questions that have arisen between the United States and Canada. He also called attention to the advanced ground that the United States has taken in the matter of submitting international questions to arbitration, but he admitted that the time had not yet arrived when a nation's good will towards its neighbors could constitute a sufficient defence. The following paragraphs give a very fair idea of the senator's general viewpoint:

"The United States and Canada for the past hundred years have settled all controversies, some of them of a grave character, by arbitration. In this instance consent and usage have ripened into a habit, the effect being that both countries have reached such a frame of mind that it is difficult to conceive of a dispute between the two countries which they would not be willing to arbitrate. When all nations have reached this frame of mind, war will cease.

"The United States should take just pride in its efforts for more than a century in behalf of peace, justice and good will among the nations of the earth. It has led the movement for arbitration, for the rights of neutrals, for the inviolability of private property in maritime warfare, for the amelioration of the laws of war, and for the establishment of a truly international court of justice modelled on our Supreme Court.

"But today we are confronted by present conditions which we cannot escape from—the intense spirit of nationality, uncertain rules of international law and an imperfect system of arbitral justice—and while these conditions exist we are only following the dictates of reason and common sense when we insist that this country should be reasonably prepared for war."

MR. STEDMAN BACK AGAIN.

The news that Arthur W. Stedman is back in the rubber trade will be received with much satisfaction by his hosts of friends. As of yore, Mr. Stedman's particular line will be crude rubber. With offices in Boston and New York and excellent connections, his success is assured. As he states it, his business is to be "strictly commission," and the emphasis that he lays upon the "strictly" leads one to believe that he will live up to it. Mr. Stedman's Boston office is at 73 Beverly street.

NEW INCORPORATIONS.

Brooklyn Tire Co., Inc., August 30, 1915; under the laws of New York; authorized capital, $30,000. Incorporators: William L. Cahn, Edward F. Quinn and Malvina DuFresne, all of 128 Broadway, New York City. Manufacture and deal in vehicle tires.

Davenport Safety Tire Co., The, August 7, 1915; under the laws of Arkansas; authorized capital, $100,000. Incorporators: J. R. Alexander and W. H. McLaughlin. Location of principal office, Little Rock, Arkansas. To own and develop United States Patent No. 1,077,044.

Double Mileage Tire Co., Inc., September 22, 1915; under the laws of New York; authorized capital, $10,000. Incorporators: John J. Mahker, 319 Electric avenue, Rochester; Warren Bulkeley, 60 Plymouth avenue; Fred McCausland, 84 Plymouth avenue, both in South Rochester, all in New York. Tires.

Economy Tire Co., Inc., September 9, 1915; under the laws of New York; authorized capital, $1,000. Incorporators: Frank A. Koonz, 9 Robinson street; Earle C. Hall, 306 Summit avenue; Edward J. Vrooman, 1206 Union street, all in Schenectady, New York. Tires and accessories.

Illinois Rubber Co., September 1, 1915; under the laws of Maine; authorized capital, $75,000. Incorporators: Albert F. Jones, president; T. L. Croteau, treasurer, and James E. Manter, clerk, all of 281 St. John street, Portland, Maine. To produce, manufacture, buy, sell, export, import and generally deal in and with rubber and gutta percha; merchandise and substances of which rubber is a component part.

International Rubber Co., The., September 2, 1915; under the laws of Colorado; authorized capital, $100,000. Incorporators: Charles C. Gates, John G. Gates and Ernest H. Cooper. Location of principal office, Denver, Colorado. To manufacture, buy, sell and deal in all kinds of rubber goods.

Montclair Rubber Co., August 24, 1915; under the laws of New Jersey; authorized capital, $10,000. Incorporators: Walter F. Smith, Alice F. Smith and J. Clifford Stricker, all of Trenton, New Jersey. Location of principal office, 203 East State street, Trenton, New Jersey. To manufacture, sell and purchase all kinds of goods of which rubber is a component part.

National Pneumatic Tire Co., The, July 24, 1915; under the laws of Ohio; authorized capital, $25,000. Incorporators: Peter Kelly, Wesley J. House and William Sylvia. Location of principal office, Cleveland, Ohio. To manufacture and sell rubber goods, tires and rubber specialties and to control patents covering same.

Nu-Septic Hard Rubber Syringe Co., Inc., September 22, 1915; under the laws of New York; authorized capital, $1,000. Incorporators: Samuel L. Weiss, 468 Bainbridge street, Marx Finstone, 483 Park place, and Henry Klein, 723 McDonough street, all in Brooklyn, New York. Rubber goods, etc.

Rutherford Removable Rubber Tip & Novelty Co., July 27, 1915; under the laws of Washington; authorized capital, $50,000. Incorporators: William Rutherford, W. E. Foy and H. B. Waite, all of Seattle, Washington. To buy and sell rubber supplies and automobile attachments of rubber.

Service Sole & Heel Co., August 13, 1915; under the laws of Delaware; authorized capital, $10,000. Incorporators: John C. Gilpin, 1917 Rittenhouse street, Philadelphia; John Davidson, Rutledge, both in Pennsylvania, and Solomon F. Glenn, 322 Cooper street, Camden, New Jersey. To buy, sell or otherwise deal in rubber, leather, boots, shoes, heels and all kinds of findings.

Standard Four Tire Co., June 30, 1915; under the laws of Iowa; authorized capital, $240,000. Incorporators: J. R. Beaver, William J. Richards, A. L. Higbee and H. S. Charles, all of Keokuk, Iowa. To manufacture, buy and sell rubber goods, such as automobile tires, accessories, etc.

Sunset Rubber & Supply Co., August 6, 1915; under the laws of California; authorized capital, $25,000. Incorporators: E. S. Long, W. M. Friedenburg, J. H. Bathrich, Jr., Pauline F. Bathrich, L. T. Chanslor, F. P. Williams and Alice V. Deeble. Location of principal office, 1020 West Thirty-sixth street, Los Angeles, California. To manufacture and deal in rubber goods and articles of all kinds.

United Tire & Rubber Co., July 31, 1915; under the laws of Ohio; authorized capital, $1,000. Incorporators: Jesse S. Wainright, Jacob Reinhardt and S. J. Colwell. To buy, sell, manufacture, deal and trade in auto and vehicle tires, etc.

Wood Auto Supply Co., Inc., September 9, 1915; under the laws of New York; authorized capital, $25,000. Incorporators: Charles J. Wood, 320 Rutgers street; George E. Camp, 7 Noyes street, and Emerson M. Willis, Proctor Boulevard, all of Utica, New York. Auto and carriage tires.

Zegler Tire & Fabric Co., August 26, 1915; under the laws of Indiana; authorized capital, $50,000. Incorporators: Casimir Zegler, Edwin R. Dean and Francis I. Hardy. Location of principal office, South Bend, Indiana. To manufacture fabric of all kinds and also automobile, bicycle and carriage tires.

JESSE E. LA DOW.

WHEN the Executive Committee of the Rubber Club of America, Inc., at its last meeting, held September 16, elected Mr. Jesse E. La Dow of the Mansfield Tire & Rubber Co. as a member of the Legislative Committee of the club it did not make the selection at random. Mr. La Dow was chosen for that position because, while a rubber manufacturer, he is also a lawyer of extended practice and experience and because, furthermore, he has devoted a great deal of time to the study of the tariff and other legislative matters so far as they affect the rubber industry.

J. E. La Dow.

Mr. La Dow is typical of the West in this regard at least—he is full of enthusiasm and energy and believes that if a thing ought to be done it can be done. He was born in Ohio, his ancestors being among the early pioneers to that State, leaving the effete civilization of New York State a hundred years or so ago for those remote western wilds. He attended the public schools of Ohio, and when he graduated from the Ohio Northern University in 1884 he first took a plunge into business, but after a year decided that the law was the more attractive and took up that study, with the result that three years later he was admitted to the Supreme Court of that State. He practiced law in Mansfield many years but always found the appeal of business very strong; so much so that in 1912, when the old Mansfield Rubber Co. had fallen into bankruptcy, he bought it in and held it in trust until the present Mansfield Tire & Rubber Co. could be organized by himself and associates. He was chosen counsel and secretary of the new company and his efforts, together with those of the general manager, G. W. Henne, have been largely responsible for the company's present success.

In the early part of the present year Mr. La Dow and his associates organized the Columbia Tire & Rubber Co. of Columbiana, Ohio, for which he also acts as secretary and counsel.

Mr. La Dow has exceptional aptitude for organization and he is very enthusiastic in regard to the possibility of the organized coöperation of all the rubber manufacturers and their workmen in the way of legislative benefits for the industry. He believes—and his own success in that direction gives him ample ground to stand on—that employers and employees should work together for the common good and that in this connection the employer should take the trouble to inform the employee in regard to legislative enactments proposed, pointing out to the workmen whether they are beneficial or detrimental; and he believes the same course should be pursued in relation to candidates for office, state or national—that their record and their promises should be placed before the men in the factory so that they can vote intelligently as regards their own interests.

Mr. La Dow is thoroughly optimistic as to what can be accomplished through legislative activity for the good of the rubber trade if the 400 members and over of the Rubber Club, representing some 20 different states, will act together.

JOSEPH M. GILBERT WITH THE GIBNEY COMPANY.

At a special meeting of the stockholders of the Gibney Tire & Rubber Co. held in Philadelphia, September 7, Joseph M. Gilbert was elected vice-president and director of sales.

Mr. Gilbert is one of the best known men connected with the tire trade, having been prominently associated with this branch of the rubber industry most of the time since 1900. Fourteen years ago he was sales manager of the Firestone Tire & Rubber Co. Later he went to the Continental Caoutchouc Co., of which he became general manager; and when in March, 1911, the Continental company was merged with Morgan & Wright, the G. & J. Tire Co. and the Hartford Rubber Works Co. into a new corporation—the United States Tire Co.—Mr. Gilbert was made general manager of the new company. It was said at the time that he was considerably instrumental in bringing about this consolidation of interests and later in supplanting the four individual brands made by these four companies with the United States Rubber Co.'s brand.

In April, 1913, Mr. Gilbert resigned his position with the United States Tire Co. to become president and general manager of the Lozier Motor Co., of Detroit. His acceptance of the new position with the Gibney company indicates that Mr. Gilbert intends once more to devote his energy, experience and ability, which are of an exceptional order, to the tire industry.

MR. DUBOSC IN THE UNITED STATES.

The author of the excellent article on rubber substitutes which appeared in the September number of THE INDIA RUBBER WORLD, A. Dubosc, editor of "Le Caoutchouc & la Gutta Percha," is at present in the United States; indeed he is at the center of the rubber interest here—in Akron, Ohio.

RUBBER CHEMIST DISAPPEARS.

Dr. Herbert Lindener, chief chemist of the Braender Rubber & Tire Co., Wallington, New Jersey, disappeared early in September; and though a diligent search has been made for him by his friends and by the police, no trace has yet been discovered of his whereabouts. As he was in the habit of carrying a considerable sum of money on his person it is believed by the authorities that he has met with foul play.

PERSONAL MENTION.

A. D. Weber, for some years in charge of the footwear production and sales at the head office of the Dominion Rubber System in Montreal, has been appointed general manager of the Canadian Consolidated Felt Company, Limited.

On the first of September Boris Bieley of New York was appointed American representative and agent of the firm of Leonard Morris, Manchester, England. Mr. Bieley has opened an office at 59 Pearl street, New York.

F. I. Reynolds, formerly tire sales manager of The B. F. Goodrich Co., has been chosen as manager of the automobile tire department of the United States Tire Co., which is increasing its executive personnel to handle the rapid growth of business.

George H. Carnahan has been elected president of the Continental Rubber Co. of New York in place of Edward B. Aldrich, who recently resigned.

W. E. Hardy, for the past eleven years connected with the Diamond Rubber Co., and The B. F. Goodrich Co., and lately in charge of the sales of their mechanical rubber goods division, has been appointed sales manager of the Boston Belting Co., Boston.

Andrew Wightman, formerly of The Staunton Dielectrite Rubber Co., Muskegon, Michigan, which is now the Vulcanized Products Co., has resigned his position as superintendent of the Vail Rubber Co., Chicago, and will make his home at San Diego, California.

H. MUEHLSTEIN & CO.

The accompanying half-tone shows the waste rubber warehouse of H. Muehlstein & Co., located at 391-5 Washington street, New York. It has a floor space of 43,000 square feet, and is in close proximity to important railroads and steamship docks.

The New York staff consists of 27 members, and the house has branches in Chicago, Akron and London. The Chicago agency takes care of all western territory, while the Akron branch covers the central states. Mr. Muehlstein, still a very young man, has developed his present elaborate organization by close attention to business and the exercise of unusual executive capacity.

PURCHASING AGENTS DINE AND TALK.

The Purchasing Agents' Association of New York held its first meeting of the season at the Hotel Breslin on the evening of September 21. After the dinner had been duly appreciated there were some interesting addresses, and, in addition, a three-reel motion picture entertainment showing the various processes used in the manufacture of steel pipe, the pictures covering the whole process from the mining of the ore to the finished product.

A number of men interested in the rubber trade are members of this association, including F. W. Lingley, of the American Hard Rubber Co., New York; A. H. Searle, of the Barrett Manufacturing Co., New York; J. A. Lampe, of the Strong Rubber & Asbestos Manufacturing Co., New York; F. M. Moore, of Alexander & Baldwin, New York; E. M. Eisenkraft, of A. Schrader's Sons, Inc., Brooklyn; J. I. McComb, of the Joseph Dixon Crucible Co., Jersey City, New Jersey; G. W. Skirm, of the United & Globe Rubber Manufacturing Cos., Trenton, and G. Winters, of the La Favorite Rubber Manufacturing Co., Paterson, New Jersey.

SEMI-ANNUAL MEETING OF COTTON MANUFACTURERS.

The National Association of Cotton Manufacturers met at the Hotel Griswold, New London, Connecticut, from September 9 to 11. The annual banquet was the special feature of the meeting. After dinner addresses were made by President Albert Green Duncan, Charles G. Bancroft and Hon. John W. Weeks. Several papers of interest to the trade were read during the meeting. A golf contest, baseball and tennis games with suitable trophies, added to the general entertainment.

TRADE NEWS NOTES.

The durability of the United States Tire Co.'s inner tubes was recently demonstrated in a novel manner by a member of the advertising force. The tube was placed around the man's waist, a rope being tied to it and drawn over a pulley. He was then lowered from the sixth floor of the First National Bank Building, New York, his entire weight being held by the rubber tubing until he reached the ground.

J. P. Devine Co., of Buffalo, New York, is actively engaged in the manufacture of machinery for numerous aniline plants, some of which are to be installed by American rubber companies, whose demand for aniline can, at present, be met in no other way.

The Boston Belting Co., Boston, has lately placed the Memphis, Tennessee, agency for its goods with the well known rubber house of Towner & Co., who will carry in stock a line of the Boston Belting Co.'s well known goods, and will be in position to supply the requirements of their trade in the Memphis territory.

The retail trade in United States tires in St. Louis will be handled by the United States Sales Co., recently organized with the following officers: Edgar Gartside Niggeman, president; George J. Breaker, treasurer, and Frederick C. D. Dobson, secretary. The salesroom will be at 3567 Lindell avenue.

The Quality Tire & Rubber Co., of Hartville, Ohio, has increased its capital stock from $75,000 to $500,000 and will enlarge its plant. The sales offices of the company are located in Akron.

A complete vulcanizing plant has been installed at Nashville, Tennessee, as the home of a new tire sales company. The concern will be known as the Federal Tire Service Co. Its personnel consists of Alvin Wingfield and F. W. Reynolds, both of Little Rock, Arkansas, and both experienced in the tire business. Besides the line of Federal tires the company will carry a complete stock of inner tubes, as well as all other rubber accessories manufactured by the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin.

Plans have been prepared for a new power-house, to be erected by the Falls Rubber Co., Cuyahoga Falls, Ohio. Two 150-h.p. high-pressure water-tube boilers, as well as vacuum pumps, will be installed, for power, heating and vulcanizing purposes.

Receivers have been appointed for the Morgan & Marshall Rubber & Tire Co., of East Liverpool, Ohio, on petition of Charles Stein, C. Cronin and P. McNicol, the first of whom has a suit pending against the company on a claim of $1,600.

L. W. Hewitt, a stockholder in the Southern Tire Co., Louisville, Kentucky, has filed suit in the Circuit Court to have a receiver appointed to collect the outstanding accounts, pay off the debts of the concern, and wind up the business.

The American Fountain Pen Co. has opened a new office at 15 to 19 Maiden Lane, New York, to be occupied jointly by this company and the firm of Lewis & Hill, its export agents. F. S. Latremore, for the past two years manager of the Chicago office, will be in charge.

The Gordon Rubber Co., of Canton, Ohio, has changed its name to Gordon Tire & Rubber Co. Its capital stock of $300,000 has been increased, and an addition to its plant is contemplated.

It is probable that Somerset County, Maine, will become a large source of supply for asbestos, valuable deposits having been found in Skowhegan by Charles H. Warren, mineralogist of the Massachusetts Institute of Technology. An extensive report has been made by Mr. Warren, in which he states that an investment of $400,000 would be needed to make the supply available.

TRADE NEWS NOTES.

The resolution recently adopted by the American Iron, Steel & Heavy Hardware Association to the effect that the distribution of automobile accessories is to be undertaken by American heavy hardware jobbers will have important consequences, according to Secretary John C. Purdle. He believes that this action will eliminate the garage and special automobile repair man and rehabilitate the country and city blacksmith shop, and that this will mean lower repair prices.

The report of the special investigating committee appointed by Mayor Mitchel, of New York, following the subway fire of January 6, shows an extraordinary lack of proper insulation. It is alleged that rubber-covered wire which should be in conduits is left exposed and, moreover, was found to be cracked in many places. The committee recommends that electric wiring be installed in a fireproof manner throughout.

The New Jersey Automobile Trade Association is planning to hold an automobile show in Newark, New Jersey, during the last week in February.

The Ford Motor Co., Detroit, has contracted with the Marion Insulated Wire & Cable Co., Marion, Indiana, for about 300,000 feet of insulated wire—some of it as large as 300,000 circular mils—to be used in a large addition to the Ford plant.

Plans have been prepared and contracts are soon to be awarded by the Lambertville Rubber Co., Lambertville, New Jersey, for the erection of a three-story brick plant 60 x 110 feet in dimensions.

A brief has been submitted to the Interstate Commerce Commission by the National Association of Waste Material Dealers protesting against the restraint of railroads from advancing the classification on rags, waste, etc., in less than carload lots from fifth to fourth class. Specific reasons on behalf of this protest are given and members of the waste material trade hope for a favorable decision on October 13, when the case will be argued.

At the twentieth annual convention of the International Association of Municipal Electricians held in Cincinnati, Ohio, August 24 to 27, R. A. Smith, of Norfolk, Virginia, read a paper on "The Advisability of Using Concentric Wiring in this Country." An extended discussion on this subject followed.

George A. Hasson & Co., a new tire concern at Columbus, Ohio, act as agent for the Chester and Traveler lines of tires and tubes.

The Chester Rubber Tire & Tube Co., Chester, West Virginia, a subsidiary of the New York firm, is extending its plant so as to increase its capacity about eight times.

D. L. Davis Co., Fort Madison, Iowa, is planning to erect a large factory building for the manufacture of a tire inflator.

The McClurg Rubber Co. has been organized to take over the business of the S. & M. Rubber Co., of Coshocton, Ohio, its stockholders having exchanged their stock from the old company to the new, all unpaid stock in the old concern having been canceled by the courts. The reorganized company assumes all outstanding obligations. Machinery is now being installed for the manufacture of tires.

The Federal Rubber Manufacturing Co., Cudahy, Wisconsin, has erected a five-story addition to its plant, covering 50,000 square feet of space. The new building will be used chiefly for the manufacture of automobile casings.

The New York Electrical Show, ninth annual exposition, will be held at the Grand Central Palace, New York City, October 6-16.

RUBBER CLUB EXECUTIVE COMMITTEE MEETING.

The meeting of the Executive Committee of the Rubber Club was held at the Union League Club, New York, on September 16, 1915, George B. Hodgman presiding. The resignation of Francis R. Peabody of Akron, Ohio, was accepted, and Jesse E. LaDow, secretary of the Mansfield Tire & Rubber Co., Mansfield, Ohio, was elected a member of the legislative committee, *vice* Eugene H. Clapp, Boston, resigned.

The following new Firm Members were elected: Brighton Mills, Passaic, New Jersey, representative, Thomas M. Gardner and Fred Stern & Co., 44 Whitehall street, New York, Fred Stern, representative. The following Associate Members were also elected: Geo. W. Sherman, of The B. F. Goodrich Co., Akron, Ohio; J. William Fellows, of the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts; Francis S. Dane, Hood Rubber Co., Watertown, Massachusetts; Homer J. Killion, Killion Rubber Co., Dorchester, Massachusetts; Harry A. MacKusick, Philadelphia Rubber Works Co., Philadelphia; Ernest C. Clark, Clark Rubber Co., Franklin, Massachusetts.

The Executive Committee would be glad if out-of-town members as well as those resident in New York would make use of the club's commodious rooms at 17 Battery Place. Telephone service, stenographic assistance, and other general office conveniences will be furnished free to all members.

RUBBER CLUB DINNER TO BE HELD JANUARY 28.

The annual dinner of the Rubber Club of America will be held on the 28th of next January, at seven p. m., in the Astor Gallery and Myrtle Room of the Waldorf-Astoria, New York. The meeting of the Executive Committee and Board of Directors of the club, as well as of the Executive Committee of the Mechanical Rubber Goods Manufacturers' Division and the Rubber Sundries Manufacturers' Division, will be held at four p. m. on the same day, at the same hotel.

AS TO SHIPPING TIRES TO HOLLAND.

The secretary of the Rubber Club sent out, September 21, a communication to rubber manufacturers regarding a rather peculiar situation that has arisen in the export trade to Holland. The Holland-American Steamship Line, according to this communication, has informed forwarding agents that it would receive goods, including rubber—as for instance, automobiles with tires—for direct shipment to Holland in case they were assigned to the Netherlands Oversea Trust, this corporation having entered into an agreement with the British authorities.

But it appears that this agreement covers general contraband goods and does not refer to the export of rubber goods, which must be governed altogether by the agreement made between American manufacturers and the British government. The secretary closes his communication as follows:

"In view of the attitude of some forwarding agents and some steamship lines, we can only again warn manufacturers to exercise extraordinary caution over their export shipments and not let any products for export go out of their factories without positive knowledge that they will be handled in accordance with the bonds and guarantees."

ICELAND AND THE AZORES CLASSED WITH EUROPEAN NEUTRALS.

The following communication referring to Denmark, the Azores, and the Canary Islands, was sent to rubber manufacturers by the secretary of the Rubber Club, September 21:

"The British Government has ruled that Iceland, belonging to Denmark, the Azores Islands, belonging to Portugal, and the Canary Islands, belonging to Spain, are to be classed as neutral European territory when making shipments of manufactured rubber goods. Goods consigned to these islands by signers of the British rubber guarantee should be shipped by way of the United Kingdom and license obtained for re-shipment therefrom."

Very truly yours, H. S. VORHIS, Secretary.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A dealer in rubber goods in Norway is anxious to form commercial relations, on an agency basis, with American manufacturers of pneumatic tires for automobiles and bicycles and solid truck tires; also air-hose. Report No. 18,128.

A commission merchant in Brazil is desirous of communicating with American importers of rubber, etc., samples of which he will supply. Report No. 18,140.

A tire repair shop in Brazil is in the market for vulcanizing machinery, rubber paste and repair materials. Report No. 18,150.

A Brazilian firm offers American dealers an opportunity to bid on 100 tons of scrap rubber. Report No. 18,153.

The representative of an Italian firm desires names and addresses of American exporters of ceresin wax, large quantities of which are needed. Report No. 18,158.

A business man in Brazil has samples on exhibition at the Bureau of Foreign and Domestic Commerce, Washington, of carnauba wax, in the supply of which he would be glad to interest American firms. (Refer to file No. 64,706.) Report No. 18,169.

A firm in Spain wishes to secure samples of rubber for use in the manufacture of rubber stamps. Report No. 18,172.

A firm in Scotland desires to correspond with American manufacturers and exporters of textile and elastic goods similar to samples which may be examined at the Bureau in Washington or its branch offices. (Refer to file No. 64,746.) Report No. 18,205.

A brewing firm in Greece is in the market for rubber discs for beer bottle stoppers, similar to samples which may be seen at the Bureau or its branches. (File No. 64,698.) Report No. 18,213.

A firm in Italy desires to represent American manufacturers of surgical apparatus, rubber goods, hospital supplies, etc. Report No. 18,222.

A dealer in the Netherlands desires to communicate with American manufacturers and exporters of sporting goods. Report No. 18,273.

RUBBER TRADE INQUIRIES.

[117.] A dealer in specialties desires names of manufacturers of bathing shoes with rubber soles and heels.

[118.] A correspondent would like addresses of manufacturers of cement-making churns.

[119.] A rubber company wishes to get in touch with a firm manufacturing machines for braiding straight side bead wires.

[120.] A South American importer of rubber heels, handling 40,000 dozen or more a year, is seeking a source of supply.

[121.] Inquiry has been received for names of manufacturers of rubber in sponge form; also for the name of a manufacturer of machines for cutting the sponge rubber into shape.

[122.] An inquiry has been received for the name of a firm which can supply cotton linters to the trade.

[123.] A correspondent wishes to know where Chatterton's compound may be purchased.

[124.] We have an inquiry from South America for flat rubber rings of European standard as to thickness, quality, etc.—the rings being cut thinner than "21 to the inch."

[125.] A correspondent wishes to know where "Aristi" and "Geranium Red" can be purchased in the United States.

PROPOSED GOVERNMENT PURCHASES.

The Bureau of Supplies and Accounts, Washington, is inviting bids to be opened October 12, on Navy Department supplies as follows: Five thousand pairs rubber boots—schedule No. 8,818; 32 swinging reels for hose—schedule No. 8,807; rubber covered wire—schedule No. 8,820.

TRADE NEWS NOTES.

One of the attractive exhibits at the 43rd Annual Convention of the International Association of Fire Engineers, held in Cincinnati, Ohio, the first of September, was the display of the Bi-Lateral Fire Hose Co., of Chicago, Illinois. The construction of their hose was explained by the representatives of the company.

Mr. Herbert Sewell, president of the Sewell Cushion Wheel Co., of Detroit, Michigan, predicts an output for this year as large as the total output of the last five years. To create additional space for stock the company is adding two stories to a one-story structure in the rear of their quarters.

The Standard Four Tire Co., of Keokuk, Iowa, expects to begin operations in its new factory building in November. The company has just purchased the entire holdings of the Amazon Rubber Co., of St. Louis, and will remove a part of the machinery to Keokuk.

The Cleveland-Ford Tire Co., Cleveland, Ohio, is erecting a factory in that city which will have a main building 46 x 300 feet, two stories and basement, with a wing 50 x 60 feet and a one-story power house 40 x 100 feet, all of brick and reinforced concrete. The following officers have been elected: President, James L. Smith; vice-president, P. C. Remick; secretary and treasurer, Walter J. Leinbach; general manager, A. E. Pearce.

The Empire Rubber & Tire Co. of Trenton, New Jersey, is erecting an office building in Boston, Massachusetts, which will be 25 x 95 feet, representing an investment of nearly $75,000.

The Luck Tire & Manufacturing Co. is planning to erect a $100,000 plant at San Antonio, Texas, for the manufacture of pneumatic puncture-proof automobile tires.

A newly organized firm, Loeb & Heller, will operate a wholesale metal, rubber and scrap iron business at 1250-1252 West Fifteenth street, Chicago. Both members are well known to the trade, having been in business for a number of years.

THE DE LASKI & THROPP CO. WINS SUIT.

The United States Circuit Court of Appeals for the Third Circuit has recently affirmed the decree of the United States District Court for the District of New Jersey, in the case of The de Laski & Thropp Circular Woven Tire Co. *vs.* William R. Thropp & Son's Co. In this litigation, which involved United States patent No. 1,011,450, owned by The de Laski & Thropp Circular Woven Tire Co., and covering its well known tire wrapping machine, the lower court held that the patent was valid and was infringed by the tire wrapping machine manufactured by the William R. Thropp & Son's Co.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on September 25 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., common	300	..
Ajax-Grieb Rubber Co., preferred	101	110
Firestone Tire & Rubber Co., common	540	..
Firestone Tire & Rubber Co., preferred	111	..
The B. F. Goodrich Co., common	69	71
The B. F. Goodrich Co., preferred	108	109
Goodyear Tire & Rubber Co., common	310	..
Goodyear Tire & Rubber Co., preferred	109	..
Kelly-Springfield Tire Co., common	230	235
Kelly-Springfield Tire Co., 1st preferred	90	92
Kelly-Springfield Tire Co., 2nd preferred	235	240
Miller Rubber Co., common	190	195
Miller Rubber Co., preferred	107	109
Portage Rubber Co., common	55	58½
Portage Rubber Co., preferred	93	94
Rubber Goods Manufacturing Co., preferred	..	..
Swinehart Tire & Rubber Co.	86	90
United States Rubber Co., common	52	53½
United States Rubber Co., preferred	106	107½

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

NEW ENGLAND rubber conditions as a whole have improved materially during the past six weeks and the outlook is promising. The tire, rubber shoe manufacturers and proofers are especially busy, but makers of mechanical goods with certain exceptions are only fairly active. Some of the tire factories are working double shifts, and the product being turned out is, as nearly as can be learned, mainly for domestic consumption.

* * *

The newly formed Rain Coat Manufacturers' Association held its first official meeting in the committee rooms of the Kimball Building, 18 Tremont street, on the afternoon of Saturday, September 25, for the purpose of electing officers, drafting by-laws and converting the benevolent organization agreed upon on the Wednesday preceding into a corporation. The membership of the Association, which includes all but one large and two small companies of this class of raincoat manufacturers, is confined within a radius of 25 miles of Boston. The recent strike has been virtually settled, as over 95 per cent. of the workers have returned to work. The officers of the association are William Lichtenstein, president; Samuel Goldstein, vice-president; H. P. Gordon, treasurer, and Daniel Harris, secretary and general counsel.

The directors are William Lichtenstein, Samuel Goldstein, H. P. Gordon, Barney Bennett, Lewis Fein, Louis Simmons and D. S. Shapiro. The attorneys for the association are Harris & Harris, 18 Tremont street, Boston. Included in membership are the following twenty raincoat companies: Bay State Raincoat Co., Bennett Bros. Raincoat Co., C. & C. Raincoat Co., Crowne Raincoat Co., Eagle Raincoat Co., Goodrich Raincoat Co., Hub Raincoat Co., International Raincoat Co., Metropolitan Raincoat Co., Monarch Raincoat Co., New England Raincoat Co., Panama Raincoat Co., Red Cross Raincoat Co., Star Raincoat Co., Tremont Raincoat Co., United Raincoat Co., Universal Raincoat Co., Washington Raincoat Co., Rubin Mfg. Co., Weatherproof Garment Co.

* * *

Building materials worth $15,000 and four freight cars were destroyed by fire and a gasolene explosion in the yard of the Fisk Rubber Co., Chicopee Falls, on July 15. The company's buildings were in great danger and the chief of the fire department has received a letter of commendatiion with a check for $25 enclosed for the Firemen's Benefit Association, in appreciation of the work of the department in checking further damage.

A rumor has been afloat that the explosion was due to a pro-German plot, possibly the act of a "crank"; but there seems to be no foundation for this, save the present excitable state of the public mind.

"Fisk Day" was celebrated on September 4 by a holiday with pay for all the employees of the company, the total cost in free wages amounting to close upon $10,000.

* * *

The Alden Rubber Co., 58 Thayer street, succeeds the Hoyt Rubber Co. of the same address. The present officers of the company are G. Edwin Alden, president; B. E. Phillips, treasurer, and John Alden, secretary. They are making a general line of molded specialties.

* * *

The Boston employees of The B. F. Goodrich Co. recently held their annual outing at Lexington Park, Lexington, 250 being present. After a ball game there were field sports, all well contested, including some novelties, among them the "Inner Tube" race, the "White Boot" endurance run, and the "Hipress" race. The Goodrich delegation of footwear salesmen, headed by Director of New England Sales on Footwear, J. S. Capen, took prominent parts in these events. It is a question who enjoyed the feature races the more, the participants, or the audience. Luncheon was served in the grove. In the evening, a theatre party was enjoyed, after which special cars were waiting at the Park entrance for the return trip.

* * *

The King Rubber Co., Hyde Park district, have just completed a brick factory, 125 x 65 feet, and are about ready to move in. They will shortly put out a most attractive line of tobacco pouches, said to possess a number of new features.

* * *

C. P. Lovering Co., East Cambridge, are making a composition sole and heel with a rubber binder, which they claim is as durable as leather and will hold stitches as firmly. This is a resilient product which does not draw and it can be successfully attached to McKay and Turn Shoes, in the soling and heeling of which only the best leather has been previously used. This company also makes a line of rubber soles and heels as well as molded insulation.

* * *

This is the day of clubs and associations; and they are good things. One of the most interesting is the Friction Plug-Heel Manufacturers' Association, with headquarters in Boston. The representatives meet semi-occasionally, swap trade gossip, have a dinner and, incidentally, get exceedingly well acquainted with each other.

* * *

The first unit of the factory building of the Atlantic Rubber Co., of Atlantic, designed by J. A. DeWolff, has recently been completed and is a model of factory construction and arrangement.

The B. & R. Rubber Co., of North Brookfield, has purchased control of the Wills carton erecting and filling machine for jar rings.

The Duxfut, "the sole that floats," and the Para Oak soles, according to shoe manufacturers, are the equal if not the superior of leather soles. The A. & A. Rubber Co., of South Framingham, is to be congratulated for their production.

The Plymouth Rubber Co., Canton, Massachusetts, is making a very energetic and successful push on its "Durable-Kompo" soles, which is particularly timely, as the price of sole leather soars higher and higher.

The Annual Fall Convention of the salesmen of the B. & R. Rubber Co., was held at the factory, North Brookfield, during the second week of September.

* * *

Captain Francis H. Appleton recently returned from a very pleasant trip to the Panama Exposition at San Francisco, which he attended as one of four delegates from Aleppo Temple to the Imperial Council of The Mystic Shrine, which convened at Seattle. The delegation, which included J. W. Work, the well-known maker of lasts for rubber footwear, traveled in a private car and were accorded most cordial receptions at Seattle, and other western cities. Captain Appleton, who was accompanied by Mrs. Appleton, stopped over at Buffalo and Lake George, where they spent a delightful month on the return trip.

The captain gave a dinner to Colonel Sidney Hedges on the occasion of that gentleman's 71st birthday on Monday, September 27, at the Algonquin Club, Boston. Colonel Hedges was for more than 25 years the New England manager of the Mutual Benefit Life Association of Newark, New Jersey, retiring last year. He is prominent in masonic and military circles, and was formerly in command of the Ancient and Honorable Artillery Co. of Boston.

* * *

Charles A. Coe, Eastern selling agent of the United States Rubber Co., 140 Essex street, recently started West on his annual trip. He will cover Middle Western states and will be away four or five weeks.

Harold P. Fuller, of E. H. Clapp Rubber Co., returned last Saturday from a week's tour of Canada. He states that business conditions there are very favorable.

The Banigan line in New England is now represented by A. E. Barney, formerly with the LaCrosse Rubber Mills Co., of LaCrosse, Wisconsin.

Walter F. Thomas, of the Tyer Rubber Co., of Andover, Massachusetts, was married at the Hotel Somerset, Boston, September 18, to Miss Helen K. Goss, of Melrose.

Arthur W. Stedman, before his plunge into the crude rubber business at his new office, 69 Beverly street, made the week of September 20-25 a "golf week." It is said that he lowered his previous scores by many points and re-enters the rubber trade with a firm belief that were rubber not his manifest destiny he could easily become the champion golfer.

The New England men, even when they are transplanted to New York, get back home for vacations. For example, Charles W. Barnes, the assistant manager of sales of the United States Rubber Co., spent his vacation at Duxbury, Massachusetts.

George H. Mayo, manager of branch stores of the United States Rubber Co., put in the heated term at Wolfboro, New Hampshire.

H. C. Kalish has returned from a trip to the Panama-Pacific Exposition. Mr. Kalish, it will be recalled, is manager of the Wales-Goodyear department of the United States Rubber Co., of New England.

Mark M. Converse, of the Converse Rubber Shoe Co., of Malden, owns a farm in Lyme, New Hampshire, where he spent his summer vacation.

The many friends of William S. Mayo, that veteran of the rubber shoe trade in Boston, will be glad to know that the operation he recently underwent at Corey Hill Hospital, in Brookline, was successful and that he is rapidly convalescing.

North Brookfield, in this State, is possessed of an inventor of rubber devices of a great deal of value. This inventor is Arthur J. Wills. Some of his machines are: Overflow trimmer for mold work, such as heels and mats; automatic blister pricking apparatus for rubber mats; a cutter for baby carriage tires; jar ring cutting lathe; duck plug cutter for rubber heels, etc.

George E. B. Putnam, Boston correspondent for The India Rubber World, is spending his vacation at Camp Kingfisher, Norway, Maine.

In the exceedingly comfortable parlor of the Point Shirley Club, Point Shirley, Massachusetts, are two fine oil paintings. One is of Capt. Francis H. Appleton, the present president of the club, and the other is of Joseph Work, the ex-president. Both are very well known in the rubber trade.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

NOW that the summer vacation season has passed, the rubber factories of the State are resuming their stride, and overtime is again becoming the rule in several of the plants. Whether or not business is rushing depends largely on whether the particular plant under consideration deals in those supplies which are most necessary to the European nations now at war or to the automobile trade, in which there never seems to be any cessation of activity.

The increased call for rubber footwear, and for tennis shoes in particular, which has been prevalent throughout the United States during the last few months, has made itself felt at the Narragansett Rubber Co.'s plant in Bristol. This corporation has been and is now busy shipping large quantities of tennis shoes, arctics and other rubber footwear, the demand being not only large but well distributed.

* * *

The Bourn Rubber Co., Providence, reports a keen demand for rubber shoes of all kinds. While there are large orders for arctics, rubber boots, lumbermen's and Alaskans, tennis shoes have enjoyed a marked popularity, the sale for this class of goods exceeding all previous years.

The annual returns of the Board of Tax Assessors of the city of Providence were filed with the City Treasurer on September 1 and show a total levy of $5,063,520.76. In the list of corporations, concerns and individuals assessed for $50,000 or more, together with the valuation placed upon their property by the Board are the following: Joseph Banigan estate *et al*, $450,640; Joseph Banigan estate, $1,000,480; Joseph Banigan Rubber Co., $160,100; Augustus O. Bourn, $113,640; Bourn Rubber Co., $147,000; Walter S. Ballou, $248,880; Samuel P. Colt, $210,100; Davol Rubber Co., $400,000; Mary E. Davol, $748,600; Glendale Elastic Fabric Co. of Massachusetts, $175,300; Mrs. Lotta P. Kelley, widow of Arthur L. Kelley, $91,640; Mechanical Fabric Co., $342,740; New England Butt Co., $193,420; Samuel M. Nicholson, $249,600; Trustee under will of Joseph Davol, $450,000; Revere Rubber Co., $1,447,280.

* * *

The International Rubber Co., of West Barrington, is to have a spur track from the line of the Fall River and Bristol division of the New York, New Haven & Hartford Railroad, put in to facilitate the handling of raw material and the manufactured product-carriage cloth. The New Haven railroad officials have consented to the plan and permission has also been granted by the Town Council, and the rails will be continued into the company's yards.

The work of erecting a new vulcanizing room at the plant of the International Rubber Co. is completed and the new structure is now being equipped for use. The company has been granted permission for the erection of a one-story brick dry house, 25 x 76 feet, to be steam heated.

* * *

The Revere Rubber Co. has plans for the construction of a new laboratory, of one story, reinforced concrete, as an addition to its plant on Eagle and Valley streets, Providence. Dr. W. P. Bradley, one of the chemical experts of the corporation, has compiled data for a new method of manufacture, and the new building, when completed, will be used for the mixing of chemicals for the new process. It is said that the new laboratory will be one of the finest of its kind in this country.

* * *

The old sugar refinery building on Thames street, Bristol, has been taken over by the National India Rubber Co., and is being completely remodelled from foundation to roof. When completed it will contain four stories and basement, and will be made to look like an entirely new structure. A shell of brick is being constructed on the outside and new and more shapely windows are being placed. Vice-president LeBaron C. Colt says that the building is to be used by the National company as a storehouse and that separate departments will be arranged on each floor for the various kinds of finished goods manufactured by the concern.

* * *

Several improvements have been made recently upon the buildings of the Narragansett Rubber Co., Bristol.

* * *

The Rutherford Rubber Co., a corporation of East Rutherford, New Jersey, has filed notice with the State Secretary of Rhode Island that William O. Cook, of Providence, is the accredited legal representative in this State.

* * *

The Phillips Insulated Wire Works has commenced the erection of a new three-story brick building on Central avenue and Freeman street, Pawtucket. It will be of mill construction, 100 x 70 feet.

* * *

Colonel Samuel P. Colt, president of the United States Rubber Co., on September 10 made a general inspection of the plant of the National India Rubber Co., at Bristol, of which he is also president, visiting every department.

* * *

W. Mulry has opened at 97 Empire street, Providence, an em-

porium for automobile accessories. He will make a feature of factory seconds of all makes of tires.

* * *

George H. Campbell, for 21 years employed as foreman at the plant of the Collyer Insulated Wire Co., Pawtucket, died at his home in Mansfield, Massachusetts, September 1.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

TRENTON is pushing steadily ahead as one of America's most important rubber centers and in line with this program comes the announcement that many thousands of dollars are to be expended at once in adding to the capacity of the factories here.

* * *

The Ajax-Grieb Rubber Co. has announced that it will erect an extensive addition to its plant, enabling it to give employment to five hundred additional hands—practically doubling the firm's output. The new addition will be made on land already owned by the company. The main new building will have a frontage of 350 feet and a depth of 60 feet. It will be three stories high. Another mill room 150 by 150 feet will also be constructed.

In announcing the company's intentions in this direction it is also stated that a dividend of 7 per cent. on preferred and 24 per cent. on common stock has been declared.

* * *

The Thermoid Rubber Co. is building a $25,000 addition to its plant. Part of the new structure will be devoted to the making of hose, and the rest of it will relieve other departments of the factory already overcrowded. A contract for additional machinery has already been placed. The new building, which is to be of brick and steel, will be 190 feet long and 71 feet wide, and two stories high. With the completion of the new structure the company will be enabled to place about 75 more operatives at work.

* * *

The FitzGibbon Company, large users of rubberized cloth in the making of automobile tops, have placed a contract for the erection of a new factory 90 feet wide and 700 feet long, which will enable the firm to increase its capacity many times.

* * *

The Mecca Tire Co. has begun to make tires in its newly acquired factory on Mulberry street. It will market the line under the name of "Peerless." The tires are to be white with a tread bearing a triangular design. The plant, which is being fitted up by the William R. Thropp & Sons' Co., is not in full operation as yet; but one vulcanizer is now employed and another is to be installed soon.

* * *

Announcement is made that the Z. Z. Tire Co., which is rushing work on its Yardville plant, will be ready for operation about January 1.

* * *

The unusually wet weather since the first part of June has caused a big falling off in orders for garden hose. Salesmen report that dealers have thousands of feet of garden hose piled up in their warerooms. As this is the normal time to take orders for next year's delivery the real effect of the present situation will be felt next year. The raincoat and footwear people have, on the other hand, experienced an increased demand for goods.

* * *

Thomas McGuire, who has been an inside man for the United and Globe Rubber Manufacturing Cos., has taken a road position, covering Southern territory, for the same firm.

* * *

The old factory of the Brookville Rubber Co. has been opened as a reclaiming plant by a company of which E. R. Solliday of this city is the head. Mr. Solliday, who is also connected with rubber interests at Lambertville, is very ill at present with kidney trouble.

* * *

John A. Lambert, of the Acme Rubber Manufacturing Co., has been nominated for trustee of the Trenton Chamber of Commerce, the election being held October 12. The Chamber of Commerce is endeavoring to have the Pennsylvania and the Philadelphia & Reading railroad companies erect additional freight stations at points more advantageous for some of the rubber mills.

* * *

Among the concerns filing articles of incorporation in the office of the Secretary of State this month is the Montclair Rubber Co., with offices in the Wilkinson Building, Trenton. The capital stock is given at $10,000. The incorporators are Walter F. Smith, Alice F. Smith and J. Clifford Stricker.

* * *

In connection with an accident which resulted in the death of a man at the plant of the Essex Rubber Co., Judge Marshall of the Mercer Court of Common Pleas has interpreted the Workmen's Compensation Act in a way which is of particular interest to manufacturers. The workman was employed by a rigger who was erecting some scaffolding at the plant. The rigger loaned the workman to a structural iron contractor who was erecting an addition to the factory. It was while he was actually employed by the structural iron man that he was killed in a fall. The court held the original employer liable, and a verdict for $3,000 damages was awarded.

* * *

It is stated that the Colorado Tire & Leather Co. of Denver, Colorado, which has hitherto had its milling and calendering done by an Ohio factory, intends after the first of November to do this work in its own plant. With this in view the company, according to reports, has been interviewing several department heads in Trenton mills in regard to taking positions in the Denver factory.

* * *

Joseph Thropp, secretary of the William R. Thropp & Sons' Co., makers of rubber machinery, is recovering from an operation for appendicitis.

* * *

The John A. Roebling's Sons Co. is erecting a new auditorium at the corner of Sixth avenue and Main street, to accommodate desired entertainments. It will have a dance hall, a stage, a convention platform, and a basketball floor.

The Roebling Construction Co., a subsidiary of the John A. Roebling's Sons Co. has filed a certificate of dissolution with the Secretary of State.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

AKRON is no "fair weather friend" of industry, according to the report of the chief statistician of the state industrial commission, recently made public. In spite of the thousands of unemployed last year, few business concerns and industries shut down absolutely; and two of Akron's rubber plants gave their employees full time during the year; one ran overtime and comparatively few operated less than 300 days. Thirteen rubber factories worked their employees between 54 and 60 hours a week.

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Reports of an exceptionally prosperous year for The B. F. Goodrich Co. are back of the marked advance in Goodrich common stock, which touched its highest point since 1912 on the New York Stock Exchange and in the Akron market during the month of September. Nearly 15,000 shares changed hands on the New York Stock Exchange in one day, and there was a large volume of private trading in Akron.

President H. S. Firestone, in his annual report at the meeting of the Firestone Tire & Rubber Co., held at the general offices at Akron, September 1, stated that sales during the fiscal year amounted to $25,187,884.33, an increase of $5,937,744.41, or 31 per cent. over the preceding year. He explained that the company is now producing 7,500 pneumatic tires daily and that after the factory additions now under way are completed it will turn out 12,000 tires per day, or an increase of 60 per cent. All the old directors were re-elected.

The Firestone company has contracted for an eight-story building at Kansas City, Missouri, to be completed next spring. It will be built of steel and concrete with a terra cotta exterior, and will cost between $150,000 and $200,000. The first floors are to be occupied by the tire company and the top floors leased for loft uses.

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The Firestone Company held its third annual "Homestead Outing" on September 18. Fifty autos decorated with flags, banners and pennants carried foremen, superintendents and officials numbering 200, sixty miles to the old Firestone homestead at

"HOMESTEAD OUTING" OF FIRESTONE TIRE & RUBBER CO.

Columbiana, where they spent the day as guests of President H. S. Firestone. Following a bountiful feast in an immense tent, all renewed their youth with happy zest in ball games, "quoits," etc.; camera and "movie" men snapping the various activities for a permanent record of the day of jollification.

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Five new buildings in Akron are nearing completion for the plant of the Goodyear Tire & Rubber Co. This will mean an addition of about 2,000 more employees.

It is reported that the Goodyear company has sold to the Spanish government two war balloons, which are now being built at the aerial department of the Goodyear plant.

The office help of the Goodyear company are now carried to and from work in a double-decked 34-passenger jitney owned by the company. In appearance the new transportation wagon resembles a truck with a second floor attached.

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The Marion Tire & Rubber Co., which was recently incorporated in Marion, Ohio, has taken over the plant formerly occupied by a shoe company and will install tire-making machinery. It is announced that an Akron rubber man will manage the plant, but his name has not been divulged. It is planned to start active business in about six months. The capitalization of the company is $300,000, of which one-half is preferred stock, the other half being common. J. L. Price, S. B. Lippincott, W. H. Holverstott, R. T. Lewis, A. J. Berry, W. T. Jones and W. F. Moyer are the principal stockholders in the new corporation.

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The Mohawk Rubber Co. is planning to erect a two-story addition to the new four-story building now nearing completion. The dimensions of this addition will be 43 x 61 feet and it will cost about $5,000.

The name of the Gordon Rubber Co. of Canton, Ohio, has been changed to the Gordon Tire & Rubber Co. The firm will specialize in the manufacture of automobile tires.

Papers have been filed changing the name of the O'Neil Tire & Protector Co. to the O'Neil Tire & Rubber Co.

It is reported that the American Tire & Rubber Co. has received a large order for tires for the Allies. The company has advertised for an additional force of tire makers.

The Miller Rubber Co. has started a free tire service in Akron which has attracted widespread attention. Five service cars have been allotted to this work, and no matter what make of tire is used a telephone call will bring a service car to fix the trouble free of charge.

Stockholders of the Excel Rubber Co., makers of rubber accessories, have asked for a receiver. The company's liabilities are said to be $16,000, with assets of $6,000.

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Harry C. Miller has been appointed general sales manager of the pneumatic tire department of the B. F. Goodrich Co., succeeding F. I. Reynolds, who resigned last June. He will have the management of both the Goodrich and Diamond pneumatic tire sales and will make his headquarters at the factory in Akron.

Mr. Miller has had a comprehensive experience in other branches of the company, having handled equipment contracts with the big Michigan manufacturers when he was manager of the Detroit branch, and having had charge for several years past of all sales on the Pacific Coast and in the Hawaiian Islands and the Orient.

C. B. Raymond, secretary of the Goodrich company, was among the principal speakers at the opening of the new Akron water works on September 1.

Robert K. Sheppard, formerly manager of sales for the insulated-wire department of the Goodrich company, is now sales manager for the Simplex Wire & Cable Co., Boston.

George Talbot, one of the oldest men in point of service in the sales department of the Firestone Tire & Rubber Co., has been elected mayor of Urbana, one of the leading cities in Illinois, where he will assume his duties on the first of the year.

THE RUBBER TRADE ON THE PACIFIC COAST.

The Los Angeles branch of the Federal Rubber Co. has moved from South Olive street to larger and more commodious quarters in the Morrison Holet Building, at Pico and Hope streets.

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The Hunter-Smith Sales Co. have adopted the plan of sending out a Sunday service car on the various highways at Tacoma, fully equipped with a wrecking crew, a full line of tires, and all necessary implements to extricate stranded motor cars from ditches and hazardous places. This should be a great boon to tourists.

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Charles H. Minto, well and favorably known in the automobile, motor and bicycle tire trade, and for the past fifteen years connected with the Hartford Rubber Works and their successors, the United States Rubber Co. of California, has recently been appointed manager of the tire department of the San Francisco store.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

FOREIGN TIRE IMPORTS.

A MATTER which is attracting considerable notice in our press, from such staid publications as the "Quarterly Review" down to the half-penny daily, is the increased importation of American motor cars and also tires. It is with the latter that we are mainly concerned in this journal, though, of course, the car business is the more important. There is no need to emphasize the fact that German and Austrian tires are unprocurable and that French and Russian are much restricted in their supply. It should, however, be said that before the war tires were imported because of various business interests and not because they could not be obtained of home manufacture. At the present time, as our rubber tire works are all busy on government requirements, no doubt private customers experience delay in the filling of their orders and this has certainly been to the advantage of sellers of American tires, who have been energetic in pushing their wares and have established a series of important distributing depots up and down Great Britain to supplement the selling organization which sufficed for the pre-war business.

I am not going into the matter of the American exchange here, but as we are continually being exhorted to buy as little from foreign countries as possible, it is obvious that this applies to the purchase of home-made tires. Patriotism, however, frequently fails to rise to the heights demanded of it, and in this respect the tire manufacturers find it necessary to advocate an impost on foreign tires, and to judge by the tone of the utterances of erstwhile large tire dealers, it would not be surprising if something were done in this direction, though the main move will be directed at the more important car, of which the tire is only an accessory. It is understood that this matter will come up for early consideration on the re-assembling of Parliament. With regard to the contract for American tires placed by makers of American cars in England, I am authoritatively informed that the intention was to place the order in Great Britain, but that prompt delivery could not be guaranteed.

Leaving this topic, I may say that one or two recent occurrences in which journalists have come within the mesh of our war laws indicate that contributors to foreign papers must walk or, rather, write warily. I must bear this in mind while also remembering that every column I write helps to reduce the adverse balance of untold millions which is troubling our financial experts at this time. Some day, perhaps, the world will have the history of our anti-submarine warfare and this is not the time or place for premature disclosures. I think, however, it is a safe assumption that the recent fall in the price of rubber is largely due to the official statement from the Admiralty that the submarine menace is well in hand, the natural deduction being drawn that the arrival of supplies from the East is pretty well assured.

As far as government orders are concerned, both for our own services and for those of our allies, there is at the time an absence of the rush and excitement of twelve months ago, which means that the manufacturers have the situation well in hand. Indeed, in some quarters it is asserted that the easing off of this business is due to the placing of orders in America, though I have no satisfactory evidence of this and am much inclined to doubt it. In concluding this paragraph I should like to mention the appreciation with which the editorial in the August issue of THE INDIA RUBBER WORLD, headed "Shall We Keep the Faith?" has been received by British subscribers. As the judgment in the "rubber or gum" Prize Court case has not yet been delivered I must defer any comments until next month.

ERASING RUBBERS.

In my last notes I made reference to a substitute for erasing-rubber and in case an impression should be created that the genuine article is being superseded, perhaps I may be allowed to say that rubber erasers are being made by our rubber works to a much greater extent than before the war, owing to the cessation of German and Austrian imports. For instance, the North British Rubber Co., Limited, have been paying particular attention to school and stationers' rubbers, with the view of putting on the market a line of goods to replace the many varieties which in recent years have come in large quantities from the continent. The North British list comprises fourteen brands or qualities, each with a distinctive name, the number to the pound in weight being an index to the size; the prices varying from 1*s.* 8*d.* per pound in boxes to 3*s.* 1*d.*, this latter price referring to a special quality for erasing pencil marks from tracing paper in drawing offices.

THE WICKHAM HARD CURE PROCESS.

The report of the Dunlop Rubber Co., Limited, with regard to plantation rubber cured by this process (see THE INDIA RUBBER WORLD, March, 1915), which is the property of a British limited company, will necessarily prove disappointing to those financially interested. Presumably this report is to be taken as a House of Lords' decision, from which there is no appeal, though of course we all know the prevailing tendency of rubber manufacturers and experts to arrive at contrary conclusions. The virtues of creosote *per se* and the retaining of moisture in the rubber have proved to be based on unreliable ground. The result in effect is to support the opinion long held by a good many of us that the high tensile strength of the Brazilian product is primarily due to the age of the trees rather than to any magical result of the smoking process, efficacious though this may be in some respects. As the age of the trees is one of the things that the great scientific resources of the Eastern planters cannot in the nature of things alter, the Brazilian need not fear that his supremacy will be taken from him.

TRADE PROFITS.

Many of our prominent rubber works being private enterprises or private limited companies which do not publish their balance sheets, the public has no means of arriving at their profits or losses. As all the rubber companies of any standing have, however, on their own showing been extremely busy during the war, it is only natural to assume that the private concerns have done equally as well as those whose balance sheets are published in the papers. In the case of the Leyland & Birmingham Rubber Co., Limited, we note an increase of 50 per cent. for 1914-15 over 1913-14 and over 100 per cent. as compared with 1912-13. The customary dividend of 7½ per cent. is increased for this year to 12½ per cent. This absorbs £33,532, and it is notable that unusually large allowances have been made for depreciation, reserve for discounts, bad and doubtful debts, and that £10,000 is carried to reserve, which now stands at £45,000, as against an issued ordinary share capital of £268,257. With regard to the profits made lately by rubber companies it must be borne in mind that the price of raw rubber has not only been at a moderate figure, but there has been an absence of violent fluctuations—conditions which are favorable to the manufacturer.

ASSOCIATION FOR ADVANCEMENT OF SCIENCE.

The British Association for the Advancement of Science held its 85th anniversary meeting this year at Manchester. Hitherto at these meetings the subject of synthetic rubber has been quite prominent. This year it practically did not enter into any of the discussions. One of the most interesting features of the meeting was the inspection by the members of the Association of the cable works at Trafford Park of W. T. Glover & Co., Ltd. At a luncheon given by the company to the visitors the managing director, E. A. Claremont, who acted as chairman, gave an interesting account of the origin of the company 50 years ago, the founder being a Salford draper who conceived the idea of covering crinoline steel with waxed cotton so that damp would prevent the steel from damaging the dress fabric. From this small beginning the insulation of cables arose, necessitating the removal to a Salford works, which were repeatedly enlarged until about 15 years ago the present works were built on a more modest scale than they exist today. With regard to the war, Mr. Claremont said they had had to make very large quantities of telephone wire for field service; this material only had temporary use, as it could not be picked up again in active warfare for future use.

The visitors were then conducted through the works, where they inspected the various processes of pickling, drawing and tinning the copper wire; the insulation of the wire either with paper, rubber or bitumen; the lead covering where the molten lead is applied at a pressure of 13 tons to the square inch; the armoring and final testing. The paper cables, which are specially for use in damp situations, are insulated with Glover's diatrine, which is paper treated with a special insulating compound. After seeing the making of paper insulated telephone wires a visit was made to the rubber department. Although at an earlier period of the firm's history the rubber compounds were bought manufactured up to the vulcanizing stage, this is not now the case, a complete rubber manufacturing plant being now installed. This proved of special interest to the visitors. The only rubber on view was a quantity of Fine Hard biscuits and it was stated that only small quantities of plantation rubber were used and no inferior brands or reclaimed rubber. Among the foreign orders the firm has in hand is a cable for the Calcutta Electric Supply Co. to carry a pressure of 30,000 volts, and this is being tested up to 75,000 volts. The tendency of recent practice in electricity is the employment of higher and higher pressures and a new responsibility is thrown upon insulated cable makers.

Among other works which received parties of members of the association were the British Westinghouse Co. and the Ford Motor Co. (England), Limited.

IS BRITISH RUBBER LEAKING INTO GERMANY?

For some time it has been believed in Mincing Lane, that Germany was still succeeding in obtaining supplies of rubber from Great Britain, and it has been suggested that the rubber trade should coöperate in refusing to sell to firms of alien origin. It is stated that 60 per cent. of the crude rubber sold in London is sold to German firms whose members have become naturalized British. Some people profess to believe that export figures show that there exists a serious "leakage." The Board of Trade returns for the first six months of 1915 show that British exports of rubber to "other countries" (the United States, France and Russia) were very nearly double what they were in the corresponding period of 1914, amounting in value to £1,088,000 ($5,294,752), as compared with £549,000 ($2,671,709) exported during the first six months of last year. Shipments to Germany and Belgium during the first six months of 1914 amounted to £1,650,000 ($8,029,725), so that even were the whole of the excess of exports to find its way to Germany, that country would still be receiving but one-third of its quantity of crude rubber. It must also be taken into consideration that neutral countries are obliged to supply themselves with many rubber articles they formerly imported from the countries now engaged in the war, and this has stimulated their domestic rubber industries and rendered increased imports of crude rubber necessary. No doubt some leakage has occurred but it is probable that it has been of little importance. At a meeting of the Council of the Rubber Growers' Association, a special committee was appointed to consider this question.

SYNTHETIC PRODUCTS CO.

The English company formed to manufacture synthetic rubber has published some interesting information in its general annual report.

A factory known as the Rainham Works, was installed for experimenting with the manufacture and the vulcanization of synthetic rubber, but work has been stopped as the government commandeered the factory.

Of the total paid-in capital of the company there only remains £1,289 ($6,273) in the banks, a great part of the capital having been spent in installing the experimental plant. The cost of scientific research amounted to over £12,000 ($58,398), and the company has spent £40,000 ($194,660) without having sold any rubber. In spite of the declarations of the managers it appears that the undertaking was not on the way to success.

The manufacture of acetone at Kings Lynn seems to be giving good industrial results in spite of the difficulties experienced in separating properly the two bacterias that act on the starch. All the acetone manufactured since June, 1914, has been purchased by the British war department.

THE RUSSIAN-FRENCH INDIA-RUBBER, GUTTA-PERCHA & TELEGRAPH WORKS, "PROWODNIK."

The Russian-French India-Rubber, Gutta-Percha and Telegraph Works, "Prowodnik," of Riga, Russia, reports gross profits of £660,000 ($3,211,890) in 1914, against £415,000 ($2,019,598) in the previous year. As the company maintains branches in Germany and Austria, it was necessary to deduct a large sum for "doubtful" debts in addition to £165,000 ($802,973) for ordinary depreciation, as against £100,000 ($486,650) in 1913; so that there only remained £180,000 ($875,970) available for distribution, as compared with £252,000 ($1,226,358) distributed to shareholders in 1913. The dividend proposed was £1 ($4.8665) per share on the capital of £1,800,000 ($8,759,700), as compared with £1. 4*s.* ($5.87) per share paid in previous year. The actual payment was postponed until September on account of the depreciation in the Russian rate of exchange.

TIRE FAMINE IN SWITZERLAND.

It is reported that the Swiss government has caused census bureaus to be opened throughout the country for determining the quantities of cycle, motor cycle and automobile tires available for immediate use. Owners and holders of such tires are under obligation to report at these bureaus.

The latest monthly report of the electricity bureau in the communications department at Tokyo gives an increase of 14 in the number, and $541,475 in the combined capital of electric enterprises since the end of the year 1914; of which power suppliers make up the largest number. During May four companies were promoted in Hokkaido, Niigata, Nagano and Ishikawa Prefectures for the purpose of carrying on lighting operations, with a combined capital of $62,897 and total power generated of 267 kilowatts.

The Rubber Trade in Germany.

By Our Regular Correspondent.

THIS country has been at war one year, and I therefore believe it appropriate to begin this letter with a brief review of the past twelve months.

Immediately after the outbreak of the war the Imperial government took the necessary measures to minimize the ill effects of war conditions and the German people, with extraordinary flexibility, adapted themselves to the situation. For the past twelve months we have been patiently and hopefully supporting the burdens of the war. Commerce and industry have suffered all sorts of losses through the increased cost of raw materials. the suspension of practically all foreign trade, and the falling off of home trade.

The war began under conditions favorable to our armies and all counted on an early peace. This being the feeling, speculation continued active until the government saw itself obliged to regulate the prices of all necessaries of life. England then declared her "starving-out of Germany" policy. Speculation was dead, but the prices of commodities had already reached such a level as to cause great distress among our poorer people. Workmen saw the cost of living constantly increasing, while wages followed the opposite course. Large concerns, as well as the government, were obliged to take measures to keep their employees from starvation. In all the lines where war contracts were not available there was a great number of unemployed. The Allies' blockade was not alone responsible for our sufferings, for it must be borne in mind that before the war our enemies were our best customers.

Considerable export trade was done through Italy until that country declared itself for our enemies, when this all came to a full stop. England perfected her control of the shipping of the Netherlands and of the Scandinavian countries, and what little foreign trade remained was curtailed by the different embargoes our government was obliged to declare. Our commerce and industries have suffered incalculably, but, in spite of all that, I can truthfully say that both our commerce and our industry are in a healthy condition. We have learned how to coöperate efficiently and help each other. If we do not forget the teachings of this year the good to us will be well worth the sacrifices.

The rubber industry was among the first to feel the stress of war. Outside of those which could accept government contracts for tires, surgical goods and the like, few factories were kept going. And even those which were working night and day on war orders did so at little profit.

At the beginning of the war, when the prospect looked bright for the German armies, rubber men, like all the rest of Germany, felt sure that peace would be a matter of weeks and the raw material problem received little or no attention, the only cloud being the lack of skilled labor and the government's seizure of all supplies of benzene and benzol. But as the war continued and prospects of early peace faded away, the shortage of raw materials was keenly felt, prices became prohibitive, and skilled labor became more and more scarce. The shrinkage of credit obliged manufacturers to pay cash for all raw materials, and in turn they had to demand cash from their customers. This has caused much ill feeling in our rubber trade.

Some foreign trade was done until the prejudices of the Roumanians and the Italians, who feel their racial attachment to France, made matters too difficult for German salesmen. The strict enforcement of the British rubber embargoes put the final touch to the destruction of the splendid optimism that witnessed the beginning of the war. The calendar year ended with little or no profits to show, but still with good hopes for the future. Conditions, however, have not improved; on the contrary, it can be safely said that as long as the war lasts our rubber industry will continue to suffer.

In spite of the restrictions placed on the use of motor vehicles some dealers are still able to offer cars for sale; in certain instances equipped with new tires. Rumor has it that these fully equipped machines have found their way here from America. Automobile interests here are already taking steps to have the government exercise care in disposing of its used automobiles and motor trucks after the war is over. Ways and means are being devised to distribute these machines without causing too great disturbance in motor values. Rubber factories are interested in this movement, which directly concerns them. At the present time our automobile factories are working night and day on government orders.

Artificial rubber rumors are continuing to go the round of the daily press but, as a matter of fact, the production of synthetic rubber in quantities is a problem yet to be solved and years will no doubt pass before there will be any artificial material capable of competing with the real rubber nature supplies. Lately it was announced that an American scientist by the name of Noble had been able to make rubber from tar by using a high-frequency current of about 500,000 volts. The description of his process was not very intelligible, but this did not prevent the announcement from being taken seriously, or apparently so, by the daily newspapers. Of course the tale found no credence among professional men here.

The unexpected length of the war has obliged the government to strictly enforce its decrees affecting raw materials. The list of those affected by national defense measures is lengthening each day. Cotton that before the war could be obtained in Bremen at 0.64 mark (0.15) per pound cannot now be obtained for less than 1.30 marks ($0.31). When we read that Liverpool quotes cotton at 50 pfenniges ($0.12) you can understand our feelings towards England. Hardly an article of merchandise has escaped the general increase of prices. Of course these increases are all due to the scarcity of raw materials. I cannot discuss the government's measures. This is prohibited. All I can say is that they were taken in the interest of the nation. Quantities of crude rubber as small as two pounds come under government supervision and must be held at the government's disposal. The same applies to all chemicals used by the rubber and many other industries. Recently an embargo was placed on calcinated magnesia.

Automobiles, cycles, motorcycles and parts have long been under an export embargo. An embargo was recently placed on exports of wire and cable making machinery.

The enormous quantities of leather necessary for the equipment and maintenance of the army and navy, and the restrictions the government has put on the use of leather, have so increased the prices of this commodity that it no longer can be used for making shoe soles and heels and similar articles. Several important rubber factories, seeing an opportunity to develop the use of rubber soles and heels, have been making experiments and now claim to have found a perfect substitute for sole and heel leather. These substitute soles are said to be a combination of felt and rubber, and the manufacturers who have developed their manufacture hope to reap good profits, at least during the war.

A topic that is receiving considerable attention at the present time is the number of sales of rubberized garments Dutch merchants have been making throughout Germany. These garments are not believed to be of Dutch but of British manufacture and they are being offered throughout the empire at very low cash

prices. There are factories in Holland that turn out rubberized fabrics, but the belief here is that no Netherlands factory can manufacture and sell at the prices at which the garments are being offered.

The tremendous importance of this year's agricultural crop to the nation is causing the different farming centers to take special precautions to guard against the possibility of its destruction by fire. It is hoped that this movement will be beneficial to the rubber industry. Large orders for hose are expected.

A feature of the present condition of our mechanical rubber goods trade is that most manufacturers and jobbers have no men to send out to solicit trade, while on the other hand consumers are little disposed to purchase on account of poor business conditions and the fact that no one solicits their orders.

The sugar beet crop promises to be a fairly large one, and the sugar industry should offer a good market this year for rubber mechanical goods unless the economy policy continues to govern everything. The brewing business that has always been a very large purchaser of mechanical rubber goods is very injuriously affected by present conditions. Beer has become so expensive that people can no longer purchase it as they used to. However, in view of the government's "mobilization" of metals, as we call it here, the brewers can hardly expect to get any metallic pipes and they will most certainly have to use hose. This ought to be good for the rubber industry, or at least for those who have suitable hose for sale.

Rubberized cuffs and collars are selling well, both to the military and to the civil population. This line is providing good business to rubber manufacturers able to produce it. Rubberized gaiters and rubberized garments are much used by the men in the trenches, and rubber hose is playing an important part in the trench warfare.

It is current in rubber circles here that large German rubber manufacturers and dealers in crude rubber have made contracts in neutral countries where they are collecting large quantities of crude rubber for importation to Germany immediately upon the reëstablishment of peace. The object is to guard against a boom in rubber prices, possible freight shortage and other causes of delay. The government is said to have granted special permission to make foreign payments in such cases where the interest of the nation's industries is concerned.

Serious efforts are being made toward bringing about a commercial alliance with Austria-Hungary. Since the beginning of the war our allies have fought side by side with us on most of the battle fronts, and many believe that we should be united at least commercially after the war. The Dual Monarchy consumes far more rubber goods than it can produce and, although Germany has been furnishing a large percentage of the surplus demands of our ally, France, Great Britain, Russia and Italy have been selling millions of marks of rubber goods in Austria-Hungary. We believe that this should no longer be and that the Teutonic allies at war should be closer together in peace and should combine to supply their needs as far as possible.

Latest reports state that certain Belgian rubber factories have partially resumed operations. They had been closed down since the outbreak of the war.

At the general annual meeting of the Central Association of German Rubber manufacturers, which was held in Berlin recently, it was stated, regarding the financial position of the association, that the balance in hand amounted to 13,735.50 marks ($3,269.05), as compared with 21,339.92 marks ($5,079), balance on hand January 1, 1914. The association contributed 10,000 marks ($2,380) for relieving the families of those killed or injured in the war. During the year the association's membership increased from 46 to 68 members. It was voted that a large portion of the available funds be invested in the national war loan. Tire standards were also discussed, and there was a vote of encouragement to the movement for tire size standardization. A customs tariff treaty with Austria-Hungary was advocated.

Another item of rather peculiar interest I wish to mention before closing. Our troops on the Eastern front have suffered much from vermin, and, curiously enough, the rubber industry has been foremost in relieving their sufferings from this source. Our druggists' sundries manufacturers have been doing an extensive business in hard rubber vaporizers and sprayers of all types and sizes.

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Professor Harries, of the Kiel University, well known as the original producer of synthetic rubber and for his writings on the subject, has been promoted to the University of Göttingen.

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Your German contemporary, the "Gummi-Zeitung," recently lost one of its oldest and most faithful collaborators in the death of Mr. August Foerster, who passed away at Blasewitz, near Dresden, at the age of 78. Mr. Foerster has been contributing to the "Gummi-Zeitung" for the past 20 years.

A TIRE DEALER CONVICTED OF FRAUD.

A tire dealer in Germany who operated a tire vulcanizing shop together with a small business in old rubber, in the course of business came into possession of a tire casing which was in perfect condition except for a large hole. As he knew the tire was not old he shipped it to its manufacturer's claim department claiming guaranty money, alleging that the tire belonged to one of his customers who had only used it a short time when it "blew out," causing an accident that nearly resulted in the customer's death. The claim department of the tire manufacturing company, however, had a very efficient card index system which enabled them to discover that the tire in question had already been subject of adjustment, some three months previous. The company sent a representative to visit the dealer and receive his complaint and then filed an accusation with a public prosecuting attorney. The tire dealer was brought to trial and compelled to admit that the tire had come into his possession as "old rubber." He was sentenced to four weeks in jail and $25 fine.

In the course of the trial it transpired that the tire company was in the habit of indexing and carefully marking in secret characters each tire returned for a refund on guaranty. The marking was done in such a manner that not even the repair man, who went over the tire carefully both inside and out, was able to discover the minuscule markings.

DANISH CABLE INDUSTRY.

Denmark is one of the largest operators of submarine cables in the world. Danish cables connect all parts of the globe. Most of these cables were manufactured in Copenhagen.

According to the Norwegian Consul-General at the Danish capital, the Danish cable industry has more than proved its value in the present world crisis. Insulated wire and cables were among the first articles placed on the embargo list by the warring nations. Before the war Germany was the greatest supplier of cables to Norway and Sweden, where electric power, and consequently cables, are extensively used. The Danish Cable & Wire Manufacturing Co., of Copenhagen, which was already supplying the needs of Denmark, has been able to cover all the demands of the Scandinavian countries since the outbreak of the war.

A wedge-shaped cushion, the sides and bottom of which are smooth, is covered on top with a sheet of rubber sponge that absorbs the perspiration of the invalid and prevents bed sores. [German patent No. 629,124. Toni Doutrelepont.]

Replete with information for rubber manufacturers.—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

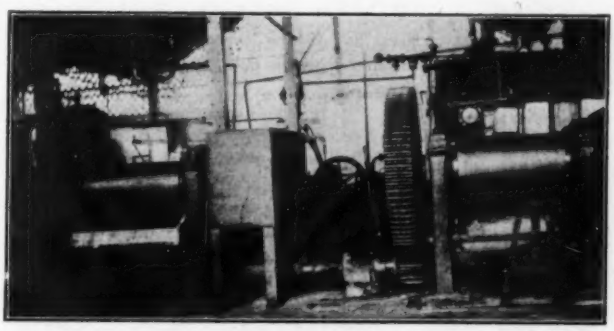
WHOLESALE RUBBER WASHING.

RUBBER planters in the Far East, particularly those who are situated near forests that abound in wild rubber, have for a long time been in the habit of purchasing gum from the native collectors. At first such rubber was shipped in the condition in which it was received. Later, however, the progressive planters installed machinery for washing and drying, and were able to substantially improve the quality of the wild product. A typical instance of this planting accessory is furnished by the Kusching Trading Co., Limited, of Sarawak, Borneo.

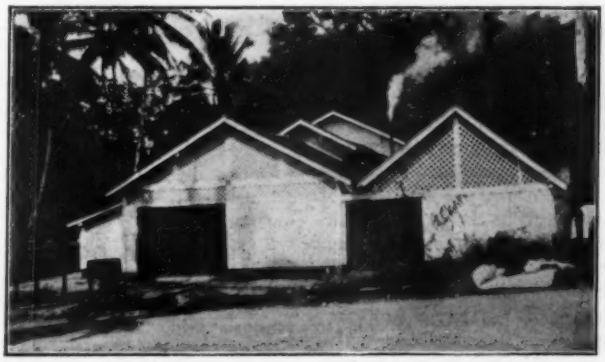
It was formed in 1909 by J. H. Brodie, a Scotchman who had spent 6 or 8 years in Sarawak with the Borneo Co., Limited, and was thoroughly familiar with local conditions, and R. S. Hardy, an American who had spent several years in Mexico in the guayule business, together with a number of local Chinese traders.

An old "Go-Down," or storehouse, was secured and renovated, and in it were placed a small 8-inch washer and an upright engine which ran the washer by belt. The original object of the mill was to refine Borneo rubber by washing and sheeting, and then to dry it ready for shipment instead of shipping in the crude form. For a while the 8-inch washer did its work, but often with additional coolie power, for at times the stiff chunks of rubber stuck in the rolls, and the belt would slip, until a couple of coolies gave it an additional heave, forcing the rubber through the rolls.

Finally it was decided to put in real washers, and two 24-inch washers were built for the company in Singapore and a 75 horsepower engine was obtained. These washers were at that time the heaviest and largest ever used in the Far East. The company had some difficulty in installing this larger machinery, for the tubular boiler which was brought over from Singapore was quite a problem. It was landed on the dock in Kuching and fortunately the chief engineer on the steamship "Rajah of Sarawak," who purchased the boiler for the company, had foresight enough to bring over a truck to get it from the wharf up to the mill—a distance of about a mile. In Sarawak there are no horses or motor trucks; in fact, coolie labor only. The boiler was transferred from the steamer by the steam winch onto the truck on the wharf, and then coolies with a long rope pulled the truck through the wharf storehouse to the street. Here every stray Chinaman and Malay was gathered in and pressed into service until there were 50 of them pulling the boiler up to the mill, with great shouting and yelling. After much hard labor the new equipment was set going. A vacuum dryer was also installed, the first ever used in Borneo.



INTERIOR VIEW OF THE PLANT OF THE KUCHING TRADING CO.



THE PLANT OF THE KUCHING TRADING CO.

TRANSPORTING RUBBER TO THE DOCKS.

The company progressed finely for a time, but the advent of plantation rubber in quantity and its low price, and the falling off in use of low-priced wild rubber caused the company to drop this work and devote its attention to washing plantation rubber.

In Borneo the natives have planted many acres of *Hevea* trees in small areas—anywhere from one to one hundred acres—and scattered all over the country; and as their trees came into bearing they were able to tap and collect their latex and coagulate it; but their method of sheeting was by rolling the coagulated latex with a bottle or a rolling pin. The company, therefore, has been a great help to them, as it now takes the coagulated latex, either buying it outright or charging so much per pound, and sheets and washes the rubber properly. Some of this rubber which the Kuching company has prepared has brought the highest price in the Singapore auctions.

AS TO FEEDING HENS ON LATEX.

In an earlier number of THE INDIA RUBBER WORLD there was an article forecasting uses for rubber, the concluding paragraph of which ran as follows: "The list grows long and this is but a beginning; there are scores of industries yet to be viewed, and, above all, the backbone of all industry—the farmer—has been neglected. Perhaps—and this is but a vague suggestion—if he raised his milk-fed hens on rubber latex, egg shells would cease to be fragile."

The "Goodrich," the sprightly publication issued monthly by The B. F. Goodrich Co., quoted quite extensively from this article in a late number and followed the concluding paragraph with this addendum: "In this connection we are reminded of certain hotel-served poultry which gave the impression that it, too, had been raised on latex, with the result that instead of producing a bounceable egg the rubber substance had become incorporated in the edible tissues."

Some Rubber Planting Notes.

COST OF PRODUCTION OF PLANTATION RUBBER.

THE Far Eastern press has of late devoted considerable attention to the question of giving greater publicity to estate costs. Opinions on the subject, of course, differ, the majority of the parties interested being opposed to the publication of costs, while a strong minority favor the publication of this information. The majority consider the cost of production of rubber as a business secret that should not be divulged, but the minority contend that rubber planting is an exceptional line of business and that it stands on a plane by itself. A correspondent of the Kuala Lumpur daily "Malay Mail" gives the following view of the question:

Rubber planting is an industry practically limited to the Dutch East Indies, Malaya and Ceylon. There are rubber plantations in East Africa and in a few other parts of the globe, but their combined output is so small that their existence does not affect the question. Large sums of money have been secured from thousands of shareholders and invested in rubber plantations. The Far Eastern plantation industry has led to a change in government policies. It concerns not only investors but the world in general, occupying a unique position not to be compared with general industries.

Though admitting this, there are many people who still maintain that it would not be a good thing to publish "all-in" costs. "Why," they ask, "should the whole world know our costs in producing rubber?" The "Malay Mail's" correspondent believes that the adoption by all of the practice of publishing costs would lead to greater economic stability—that the competitive element has to exist to produce the best results and that the competitive test can be safely applied to rubber estate work. The industry is, comparatively speaking, a young industry, with much to learn. The boom days are over, and prices are lowering to a more natural level. The successful estate manager is reducing his costs to a minimum by improved methods in tapping and by improvement in the yields obtained. If every estate published its costs, this economy should act as an incentive to those still producing on a fairly high scale.

Another point is that the vast number of shareholders who have invested in rubber naturally want to know, not only what the output has been and what profit has been made, but what was the cost of production. But there should be uniformity of accounts. It is difficult accurately to apportion estate charges. The average estate is planted in sections, and the rubber is in varying stages of development. If the whole estate is to bear the "all-in" costs, it is obvious that the sections of it that are not in bearing are going to consume a large amount of money without giving any output return. The accounts should be made separately for each section, so that it could be ascertained what the actual cost of working each section is. But where the whole estate is in bearing, and all estate and managerial items are chargeable against the rubber harvested, there is no reason why the cost per pound of rubber could not be published with beneficial results.

PARA RUBBER IN THE BRITISH GOLD COAST COLONY.

The government of the British Gold Coast recently published a report on the agricultural department of the colony which contains some interesting items regarding experiments conducted in the department's experimental stations at Tarquah and Coomassie with Para and *Funtumia*.

At Tarquah two lots of *Hevea* trees, of 15 trees each, have been tapped continuously on the half-spiral and half-herring-bone systems since March, 1910. The total average yield per tree from the two systems is 17 pounds, 4 ounces and 14 pounds, 10½ ounces, respectively, showing a yield of over 2½ pounds per tree in favor of the herring-bone system. The herring-bone system employed consisted of three half-herring-bone cuts at about 20 inches apart on one-third of the circumference of the tree. It was found that the bark on this one-third of the tree was used up after 16 months continuous tapping, so that the original bark would last four years, at the end of which time the new bark would be sufficiently strong to be retapped. Experiments proved that better results are obtained from renewed bark than from the original bark.

The estimated cost of production for rubber produced on the department's experimental stations was from 9 to 11*d.* per pound, so that the rubber produced was sold at a profit in spite of the low rates prevailing in the crude rubber market.

Experiments conducted with *Funtumia* trees, which are tapped in the full herring-bone fashion, showed that the *Funtumia* is not a good rubber plantation tree, for the yields were small for first tappings and even smaller for second tappings, the only redeeming feature being the lower cost of collecting and preparing the rubber, which was 2½*d.* per pound for the first tapping and 4¼*d.* for the second tapping. *Funtumia* grows more slowly than *Hevea*, it develops a poor root system and is easily uprooted by storms. Pests gave the Gold Coast experimental stations but little trouble except when the trees were young.

RUBBER EXPORTS FROM MOZAMBIQUE.

During the year 1913—the latest period for which statistics are available—the exports of rubber from Portuguese Mozambique amounted to 17,906 pounds.

RUBBER PLANTING IN BRITISH GUIANA.

Mr. C. K. Bancroft, assistant director, Department of Science and Agriculture, British Guiana, recently contributed an interesting article on Para rubber planting in British Guiana to the "Daily Argosy," of Georgetown, British Guiana.

The writer states that the cost per acre of bringing Para trees into bearing amounts to about £40 [$194.66]. From experiments in tapping 379 trees five and a half years old, and 300 trees six and a half years old at the Issororo experiment station, he deduces that the cost of collecting rubber from trees growing under suitable conditions would average slightly less than seven cents per pound dry rubber. He believes that these experiments, though they were conducted on a small scale, demonstrate that plantation rubber can be produced at a profit in British Guiana with Para plantation rubber selling on the market at 48 cents per pound, and that the average profit per acre would be in the neighborhood of $144 per annum.

DROUGHT IN NORTHERN BRAZIL.

The states of Ceara, Parahyba and Rio Grande do Norte, in Northern Brazil, are suffering from a very severe drought. The stricken districts furnish annually a large contingent of rubber gatherers who are now in a condition of famine and totally unable to equip themselves or to pay for their transportation to the rubber districts. As the Brazilian government subsidizes the lines of steamships running up the rivers to the forests in the interior it is suggested, in influential circles in Northern Brazil, that the government should furnish free transportation to those desiring to go into the rubber country.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Interesting Letters from Brazil.

THE RUBBER SITUATION ON THE AMAZON.

To the Editor of The India Rubber World:

THE present low price of rubber, as we have predicted, has not affected the industry on the Amazon very much. The Amazon will always be able to compete with Ceylon in prices, as we have already said. The Amazon will not be removed as a producer of rubber. As cheap as they may be able to produce their rubber, the Amazon will be able to produce it still cheaper. The middlemen, however, who are many, between producer and consumer will earn less profit. The proof of this is that during 1914 and 1915 there were very few failures recorded on the Amazon, and these in small amounts.

Practically the whole business is now conducted on a cash basis. The war has cut off their former supplies from England, Germany and the other belligerent countries with which they had a 3-to-6 months' credit. Since the Amazon is compelled to import the necessaries of life, it is obliged to purchase goods from the United States. The commission houses and the manufacturers, although very anxious to get Amazonian trade (the National City Bank not yet having established an institution which could be of great help to them in ascertaining the credits), are exporting goods to them for cash only. The Amazonian importers buying for cash have no other course than to supply the *aviadores* for cash, who in their turn send goods to the rubber centers in the interior only upon the receipt of the rubber for the goods bought. In many instances a clerk of the *aviadore* goes along with the boat carrying the goods, to exchange them for rubber and other products.

The war of course has been very bad for all business and also for the Amazon, but at the same time it has taught the Amazon a good lesson. On account of the great risk it has removed the entire credit system by means of which they could overcharge 50 to 80 per cent. on the goods.

Everybody was squandering money in going to Europe and buying all kinds of useless paraphernalia. Some bought boats at $100,000, which, after being used once or twice a year, would remain idle the rest of the time. Now they are working on a real business basis. The rubber producer is taking from the *aviadore* only those goods which he must take and which he cannot raise on his estate. Formerly he was supplied with beans, rice, corn, canned stuff, etc., in order to make profit. These he could easily raise on his estate by farming, raising cattle, chickens, etc. Now he is actually doing these very things.

For these reasons it is our opinion that the Amazon, barring all other obstacles including the 22 per cent. duty to the government, can still compete with the East. There is no doubt that Para rubber is much better than Ceylon rubber for the manufacturer. Ceylon claims, however, that she supplies a rubber that is 25 per cent. richer than Para rubber because of the loss in washing. This will easily be overcome. It is already realized, and all steps are being taken to cure the rubber in such a way as to obviate this loss and yield the same purity of rubber as Ceylon claims to produce.

The speculation in rubber on the Amazon is altogether shameful. In many instances the price here in New York is much lower than that paid by some export houses in Para. According to the present outlook sales at that port will be largely for future delivery. Though they do not have the rubber nor even have it in view, some Para exporters sell for future delivery at a much lower price than is actually quoted in the New York market. Of course, should the quotation rise, they are liable to be badly caught. They do not take this into consideration, but continue to lower the price with every sale.

As we stated above, the commerce is becoming more and more stable, since earning less they spend less. The government which calculates its budget from the former price or the prevailing price has a greater deficit each year and is seeking a way to regulate this, from which originate the valorization schemes. In attempting to improve this situation the state gets in touch with the Federal government, which, being already interested in other products, mixes them all up together, and brings forth a valorization plan which, while suitable to some, cannot be suitable to all. At any rate the entire thing will bring confusion and the men who will suffer will be the same rubber exporters.

The low price of rubber renders the income of the country less. For this reason they are trying to increase it by paying more attention to other products, especially hardwoods with which the forests of the Amazon are full, and which are very valuable and cannot be gotten in any other country. All other timber is also to be found there, and will surely be in demand after the war ceases.

Miguel P. Shelley.

PLANTING HEVEA ON THE AMAZON.

The following paragraphs are taken from a letter, which recently appeared in a paper published in Manaos, written by the owner of an estate near the mouth of the Purus River, some miles above Manaos, who is planting rubber extensively and apparently with a good deal of enthusiasm.

"On reading the message of the Governor of the State, in that interesting part where he treats of the means of encouraging the planting of *Hevea* in our State, I could not resist the duty of associating myself with this excellent train of thought, seeing that in my opinion the planting of *Hevea* is one of the surest means of assuring the future prosperity of the Amazon. I have, in fact, already planted many thousand rubber trees and am still continuing to do so.

"In addition to the recommendations of the Governor's message it would be specially useful, Mr. Editor, if the authorities of the interior were instructed to insist upon *Hevea* being planted when State lands are encroached on and cleared for planting cassava. These clearances are abandoned after making the floor, and fresh forest is cleared for the ensuing year, leaving the former clearing to become overgrown again with jungle, while it would be so simple to plant *Hevea*, seeing that one man can plant a thousand trees in a day.

"It is thus that our forests are getting cut down without any permanent advantage to ourselves, and to the detriment of our children.

"If a man puts in a day's work planting a thousand rubber trees among his cassava, it is by no means a day lost, as cleaning out the weeds and undergrowth benefits the cassava as well, and when the cassava is pulled up at the end of the year, the land remains fairly clean for another six months, which gives the *Hevea* a start of eighteen months and a growth of ten feet in height, so that it runs no risk of getting caught up and choked by the jungle afterwards.

"By adopting this plan I myself have rubber trees five years and eight months old, with a circumference of 110 centimeters at the base, that could already be tapped by modern methods."

NEW CRUDE RUBBER FIRMS AT PARA AND MANAOS.

The firms of Zarges, Berringer & Co. and Zarges, Ohliger & Co., which have dealt extensively in crude rubber in Para and Manaos, and from which the capital and interests of E. A. Zarges and Heilbut, Symons & Co., of London and Liverpool, were withdrawn on December 31 last, have been succeeded by Berringer & Co. and Ohliger & Co., who will continue the business. F. C. A. Berringer and Hugo Ohliger are joint partners in the new firms, the former of which will have its headquarters at Para, the latter being located at Manaos. A circular issued on August 4 names F. W. F. E. Paschen as their authorized representative in those cities, with full power of attorney.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED AUGUST 17, 1915.

NO. 1,150,047. Waterproof treatment of leather. A. McLennan, Ross Hereford, England.

1,150,065. Dipping device comprising rubber covered resilient layer. H. T. Roseen, Walkerton, Ind.

1,150,120. Stocking supporter. M. L. Irwin, Philadelphia, Pa.

1,150,223. Wheel and tire. M. C. Overman, New York, N. Y.

1,150,460. Life preserver. J. Schreiber, Lincoln, Ill.

1,150,508. Respiratory mask or helmet. A. B. Dräger, Lübeck, Germany.

1,150,517. Game. M. L. Hawks, New York, N. Y.

1,150,540. Drying apparatus. J. O. Ross, assignor to B. F. Sturtevant Co.—both of Boston, Mass.

1,150,593. Corset. J. Goldberg, New York, N. Y.

1,150,642. Process of manufacturing condensation products from formaldehyde and phenol. H. Stockhausen, Crefeld, and Reinhold Gruhl, Charlottenburg—both in Germany.

1,150,776. Fishing bait box. P. Lamb, Englewood, Colo.

Trade Marks.

77,605. Bowers Rubber Works, San Francisco, Cal. The word *Victor*. For rubber hose, belting and composite rubber piston packing.

78,639. Charles Niedner's Sons Co., Malden, Mass. A color line longitudinally disposed upon the goods and incorporated in the fabric and formed of a central stripe of three red warps alternating with two yellow ones, and on either side a broken stripe of two green warps contiguous to the yellow stripes. For linen hose.

78,640. Charles Niedner's Sons Co., Malden, Mass. A color line running longitudinally of and incorporated in the fabric. For linen hose.

81,626. Boston Rubber Shoe Co., Malden and Boston, Mass. The word *Nugget*. For rubber boots and shoes.

83,663. Montgomery Ward & Co., Inc., New York, N. Y. Diamond shape design with the initials *M* and *W*. For rubber balls and general sporting goods line.

86,182. B. E. Nevin, Mercersburg, Pa. Representation of a pneumatic tire with *Satan* performing repairs. A semi-liquid or cement seal for rubber tires.

86,501. Wyckoff & Lloyd Co., Springfield, Mass. The word *Lotus*. For rubber and fibrous packings and rubber hose.

86,895. York Manufacturing Co., York, Pa. The words *York Co.* For rubber packing.

87,405. The Worthington Ball Co., Elyria, Ohio. The word *Troy*. For golf balls.

87,463. The Goodyear Tire & Rubber Co., Akron, Ohio. Representation of a ball with the word *Ox-Lite* through the center. For leather fiber and rubber soles and heels.

87,736. Hood Rubber Co., Watertown, Mass. Representation of a horseshoe. For rubber boots and shoes and tennis shoes having rubber soles vulcanized to the shoe.

ISSUED AUGUST 24, 1915.

1,150,922. Apparatus for vulcanizing tire shoes. C. F. Adamson, East Palestine, Ohio, assignor to the United States Rubber Co., New York, N. Y.

1,150,930. Watch protector. L. Cohn, New York, N. Y.

1,150,986. Tire for vehicles. H. Besser, Alpena, Mich.

1,151,086. Rim construction for dual tires. J. C. Cole, assignor to Fisk Rubber Co.—both of Chicopee Falls, Mass.

1,151,093. Toy balloon. A. H. Du Bois, New York, N. Y.

1,151,133. Tire. C. B. Steele, New York, N. Y.

1,151,144. Artificial foot comprising a pneumatic sack. J. E. Wofe and T. Browning—both of Gassaway, W. Va.

1,151,227. Packing. C. E. Stokes, Trenton, N. J.

1,151,319. Insulated wire stripping device. S. G. Wood, Brooklyn, N. Y.

1,151,396. Inflated ball. F. T. Roberts, Trenton, N. J.

1,151,511. Shoe heel. E. W. Burt, Boston, Mass.

Design.

47,763. Hot water bottle. B. F. Stauffer, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

Trade Mark.

87,192. Needham Tire Co., Needham, Mass. Illustration of a spear with the word *Needham*. For rubber and rubber and canvas tires.

ISSUED AUGUST 31, 1915.

1,151,604. Pneumatic tire. W. S. Mummery, Minot, N. D.

1,151,797. Horseshoe. W. J. Kent, New York, N. Y.

1,151,859. Sectional air bag. J. P. Brophy, Birmingham, Ala.

1,151,924. Steam vulcanizer. E. N. Brown, Cleveland, assignor of one-half to J. Gordon, East Cleveland—both in Ohio.

1,151,980. Feed plug for a fountain pen. De Witt C. Van Valer, Richmond Hill, assignor to Modern Pen Co., New York—both in New York.

1,152,067. Toy comprising elastic cord. E. Allison, San Francisco, Cal.

1,152,115. Dancing shoe with rubber sole pad. D. McCormick, Columbus, Ohio.

1,152,185. Spading plate for waterproof footwear. K. P. W. Koch, Chicago, Ill.

1,152,246. Battery cell with vulcanized rubber lining. W. L. Walker, Groton, Conn.

1,152,247. Battery Jar. W. L. Walker, New London, Conn.

1,152,267. Vulcanizing apparatus. C. M. Beardsley—Harriet Marion Beardsley, administratrix—Cleveland, Ohio.

1,152,276. Pressure gage with a rubber air chamber. J. A. Bowden, Los Angeles, Cal., assignor to A. Schrader's Son, Inc., Brooklyn, N. Y.

1,152,284. Arch support for shoes. P. Broadbooks and L. E. Smith—both of Batavia, N. Y.

1,152,317. Dental vulcanizing flask. E. A. Hewes, Eskbank, Dalkeith, Scotland.

1,152,324. Rubber tire. A. S. Krotz, Janesville, Wis.

1,152,349. Waterproof fabric and process of manufacture. H. Swain, San Francisco, Cal.

1,152,372. Manufacture of seamless rubber articles. T. W. Miller, assignor to The Faultless Rubber Co.—both of Ashland, Ohio.

Design.

47,771. Vehicle tire. M. Bergougnan, Paris, assignor to Société Génerale Des Etablissements Bergougnan, Clermont Ferrand, Puy-de-Dôme—both in France.

Trade Mark.

83,461. Hooley Hill Rubber & Chemical Co., Hooley Hill, near Manchester, England. The word *Accelerene*. For a chemical substance for use with india rubber during the process of vulcanization.

ISSUED SEPTEMBER 7, 1915.

1,152,470. Vehicle tire. F. U. Adams, Hastings-upon-Hudson, N. Y.

1,152,508. Puncture proof wheel. W. J. Higgs, Lehi, Utah.

1,152,543. Demountable felly-band for vehicle wheels. J. E. Perrault, Belmont, assignor to Hood Rubber Co., Watertown—both in Massachusetts.

1,152,584. Machine for operating on shoe soles. E. E. Winkley, Lynn, Mass.

1,152,595. Invalid's corset. J. M. Bodensiek, assignor of one-third to G. O. Bodensiek—both of New York, N. Y., and one-third to F. Broaker, Brooklyn, N. Y.

1,152,601. Fountain pen filler. H. N. Carpenter, Woodford, Vt.

1,152,602. Fountain pen filler. H. N. Carpenter, Woodford, Vt.

1,152,609. Pneumatic spring. B. W. Davis, Phillips, Wis.

1,152,636. Sprinkler. H. E. Houston, Wichita Falls, Tex.

1,152,652. Hose nozzle. J. McBoyle, Oakland, Cal.

1,152,657. Tire structure. J. Piontkowski, Cleveland, Ohio, assignor of three-eighths to S. Wasielewski, one-eighth to J. Yablonowski, and one-eighth to M. Grayek.

1,152,672. Hose supporter. T. P. Tuite, New York, N. Y.

1,152,753. Garment supporter. B. F. Orewiler, Chicago, Ill.

1,152,756. Elastic tire for vehicle wheels. L. T. Petersen, assignor to The Republic Rubber Co.—both of Youngstown, Ohio.

1,152,779. Tire. H. Behm and J. Vene, assignors of one-fifth to H. Behm, one-fifth to J. Vene, one-fifth to W. Marks, one-fifth to G. J. Streisel, Sr., and one-fifth to C. C. Mair—all of Elizabeth, N. J.

1,152,791. Switch throwing mechanism. R. V. Collins, assigned to Royal Engineering Corporation—both of New York, N. Y.

1,152,830. Elastic vehicle tire. T. Midgley, Worthington, Ohio, assignor to Morgan & Wright, Detroit, Mich.

1,152,834. Process of manufacturing articles from plastic materials. R. B. Price, Mishawaka, Ind.

1,152,835. Process of treating plastic materials. R. B. Price, Mishawaka, Ind.

1,152,836. Process of treating combined plastic and fabric articles. R. B. Price, Mishawaka, Ind.

1,152,837. Process of treating plastic materials. R. B. Price, New York, N. Y.

1,152,838. Method of making vulcanized rubber products. R. B. Price, New York, N. Y.

1,152,887. Inner sole. E. C. Donnell, Brockton, Mass.

1,152,902. Vehicle tire comprising an inner tube. M. Perez, Chicago, Ill.

1,152,906. Auto tire. J. A. Read, Arlington, N. J.

1,152,929. Garment supporter. L. E. Berebaum, Chicago, Ill.

1,152,935. Process of producing compounds of rubber and steel wool. J. P. Crane, Chicago, Ill.

1,152,938. Eraser holder for typewriting machine. B. F. Fortin, Hartford, Conn., assignor to Underwood Typewriter Co., New York, N. Y.

1,152,966. Wheel comprising a pneumatic tire. D. H. Padden, Chicago, Ill.

1,152,978. Tubing machine. V. Royle, Paterson, N. J.

1,152,981. Force cup comprising an elastic cup body. W. F. Schacht, Huntington, Ind.

1,152,993. Vulcanizer. P. D. Thropp, assignor to The De Laski and Thropp Circular Woven Tire Co.—both of Trenton, N. J.

1,153,002. Joint for hose connections. A. M. Wright, Bloomington, Ill.

1,153,026. Tire pressure gage. R. A. Campbell, Minneapolis, Minn.

1,153,030. Diver's dress consisting of a shirt or jacket and separate trousers. F. L. Claren, assignor to the Firm Drägerwerk, Heinr. und Bernh. Dräger—both of Lübeck, Germany.

1,153,040. Process and apparatus for purifying caoutchouc. H. Debauge, Paris, France.

1,153,042. Tire protector. G. L. Dillard and W. Johns—both of Mogollon, New Mexico.
1,153,059. Vulcanizer. J. M. Ginter, Wooster, Ohio.
1,153,068. Demountable rim fastener. W. L. Hale, North Attleboro, Mass.
1,153,091. Hose rack. W. McClintock, New York, N. Y.
1,153,095. Car window cleaner. E. J. Martin, assignor of one-fifth to R. W. Thompson—both of Washington, D. C.
1,153,105. Pencil holder having an elastic lining. W. V. O'Connor, Grand Forks, N. D.
1,153,119. Resilient wheel. A. Kirby, Unionville, Mo.
1,153,139. Shoe filler comprising gum resin, etc. H. Snell, Hanover, assignor of one-third to G. J. J. Clark, and one-third to D. J. Head, West Hanover—both in Massachusetts.
1,153,147. Garter. E. B. Winters, assignor to Johnson Spring Garter Co.—both of Coffeyville, Kan.

Trade Marks.

79,893. John Wanamaker, New York, N. Y. The word *Taplow.* For foot balls, hand balls, basket balls, golf balls, tennis balls, etc.
84,820. Sears, Roebuck & Co., Chicago, Ill. Representation of a pyramid with the word *Rio.* For rubber garden hose.
85,819. DeLion Tire & Rubber Co., Trenton, N. J. The word *DeLion.* For rubber tires.
86,991. The Gem City Specialty Co., Dayton, Ohio. A miniature picture of a boy and girl on a see-saw with the words *Teeter's Sugar Mint Gum.* For chewing gum.
86,992. The Gem City Specialty Co., Dayton, Ohio. The word *Butternut.* For chewing gum.
87,096. Flower Waste & Packing Co., New York, N. Y. Illustration of a circle with the words *Flower, Journal, Packing, Resilient* and *Patented.* For journal packing made of cotton and woolen threads combined with coir or cocoanut fiber.
87,252. Kahn Brothers Co., Chicago, Ill. The words *Week End.* For raincoats, slip-ons, boots, rubber and canvas, etc.
87,896. Sol. Meyer, Cleveland, Ohio. The word *Hermeti-Pakt.* For surgeons' rubber gloves.
87,996. H. Sonneborn & Co., Inc., Baltimore, Md. The word *Sonco.* For raincoats, etc.

ISSUED SEPTEMBER 14, 1915.

1,153,194. Tire armor. P. A. Christenson, Benson, Minn.
1,153,286. Tool for stripping insulation covering from electric wires. H. D. Cahill, assignor to F. W. Whitcher Co.—both of Boston, Mass.
1,153,305. Tire case. W. S. Heath, San Mateo, Cal.
1,153,324. Tire vulcanizer apparatus. J. H. Lepsch, Ridgway, Pa.
1,153,348. Void tire. G. T. Segee, Revere, Mass.
1,153,368. Heel plate for rubber heels. T. C. Beazley, Richmond, Va.
1,153,396. Resilient pneumatic tire. F. Loder, La Fayette, Ind.
1,153,406. Fire hose coupling. H. W. Sisson, Lake George, N. Y.
1,153,409. Massaging device. I. R. Wheeler, Baltimore, Md., assignor of one-half to J. C. Allen, Northampton, Mass.
1,153,481. Vehicle wheel with demountable rim. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
1,153,482. Vehicle wheel with demountable rim. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
1,153,490. Device for applying chains to wheels. E. A. Harris, Scranton, Pa., assignor to Alcemo Mfg. Co., Newark, N. J.
1,153,534. Automobile horn. M. A. Auñero, Brooklyn, N. Y.
1,153,576. Circular loom. V. Royle, Paterson, N. J.
1,153,593. Telephone receiver. N. Baldwin, Mill Creek, Utah.
1,153,655. Telephone cable. K. W. Wagner, Berlin-Lankwitz, Germany.
1,153,687. Bathing cap. B. Hellinga, Amsterdam, Netherlands.
1,153,704. Wrapping. F. M. Pierce, Chicago, Ill.
1,153,799. Eraser tip for lead pencils. S. Kraus, assignor to Eagle Pencil Co.—both of New York, N. Y.
1,153,848. Wind shield cleaner. B. C. Loring, assignor to J. A. Moross and R. C. Loring, trustees—all of Detroit, Mich.

Designs.

47,827. Water bag. C. H. Place, Mamaroneck, assignor to New York Mackintosh Clothing Co., New York—both in New York.
47,830. Tire. H. W. Raymann, Portland, Ore.

Trade Marks.

71,401. Kelly-Springfield Tire Co., Jersey City, N. J. The words *Kelly-Springfield Kant Slip Tread.* For pneumatic tires.
87,359. Carlsten-Williams Co., Chicago, Ill. Representation of a seal with a pneumatic tire and the words *Silver Medal.* For pneumatic tires, pneumatic tire casings and inner tubes.
87,706. George R. Jones Co., Manchester, N. H. The words *Bobby boots.* For rubber soles, etc.
87,809. Mecca Mfg. and Specialty Co., New York, N. Y. The word *Mecca* and *400.* For automobile tires, inner tubes, etc.

UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1914.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 18, 1915.]

9,773 (1914). Rubber mud-guard. F. Malroux, 11 Boulevard de Versailles, Suresnes (Seine), France.
9,833 (1914). Reservoir pens. R. A. Ker, 13 Bayston Road, Stoke Newington, London.
9,967 (1914). Pneumatic tire. S. Librowicz, 7 Czatoriskygasse, Vienna.
10,030 (1914). Utilizing waste rubber. H. Gare, Cumberland House, Park Lane, Wembley, Middlesex.
10,092 (1914). Apparatus for vulcanizing boot and shoe soles. F. A. Antoni, 8 Aachenerstrasse, Cologne, Germany.
10,135 (1914). Wheel tire. F. Clayton, 59 Charles street, and C. T. Waterhouse, 260 Wellington Road South—both in Stockport.
10,214 (1914). Machine for inserting studs in tire treads. Dunlop Rubber Co., Limited, 14 Regent street, Westminster, and F. J. Keegan, of Dunlop Rubber Co., Limited, Alma street, Coventry.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, AUGUST 25, 1915.]

10,440 (1914). Cable. R. R. Stell, 2 Kirklands avenue, Baildon, Yorkshire.
10,449 (1914). Rubber pad for lace machine. E. Jardine, Deering street, and F. Rostance, 1 Greenfield street—both in Old Lenton, Nottingham.
*10,673 (1914). Wheel tire. J. W. Blodgett, 333 East Garfield Boulevard, Chicago, U. S. A.
10,683 (1914). Electric switch with rubber buffer. R. Bosch, 4 Militärstrasse, Stuttgart, Germany.
10,833 (1914). Vulcanizing india rubber, etc. S. J. Peachey, 8 Halesden Road, Heaton Chapel, Stockport.
*10,855 (1914). Divers' dress. E. Nichoff, Roanoke, Virginia, U. S. A.
*10,856 (1914). Foot arch support. E. J. Emery, 3 Market Square, Portsmouth, New Hampshire, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, SEPTEMBER 8, 1915.]

*11,618 (1914). Wheel tire. A. E. Shaw, 1502 Hampton street, Columbia, South Carolina, U. S. A.
11,731 (1914). Firemen's mask. W. J. Mellersh-Jackson, 28 Southampton Buildings, London.
11,732 (1914). Tire cover. Dunlop Rubber Co., Limited, 14 Regent street, Westminster, and C. Macbeth, Salford street, Aston, Birmingham.
11,741 (1914). Mud guard comprising a flexible and resilient cushion. B. Howard, 2 Maudsville Cottages, Hanwell, Middlesex.
11,748 (1914). Exercising apparatus. C. H. Roche, School Gymnasium, Tonbridge, Kent.
11,772 (1914). Spring wheel with continuous outer rigid ring and rubber cushion. A. H. Roberts, "Denham," Avenue Road, Leamington, Warwickshire.
11,784 (1914). Dental vulcanizer. E. A. Hewes, Duncraig, Waverley Road, Eskbank, Dalkeith, Midlothian.
11,788 (1914). Ship fender. L. Jacobson, 14 Boreham street, Bethnal Green Road, London.
11,849 (1914). Waterproof cover for basket. H. T. Kemp, 2 Tuam Road, Plumstead, Kent.
11,889 (1914). Electrical injunction and like boxes. St. Helens Cable & Rubber Co., and J. C. White—both of Arpley, Warrington, Lancashire.
11,929 (1914). Electrical conductors; forging and stamping metals. R. Holland, 29 Wilson street, Stretford, near Manchester, and E. A. Claremont, Brook Cottage, High Leigh, Cheshire.
11,934 (1914). Producing electric oscillations. H. Manders, 56 Pelham Road, Gravesend, Kent.
12,018 (1914). Subaqueous audible signaling. Signal Ges., Werk Ravensberg, Habsburger Ring, Kiel, Germany.
12,060 (1914). Submarine vessel having a collapsible tube made of flexible material. H. Kelley, 30 Grayshott Road, Southsea, Hampshire.
12,063 (1914). Vehicle wheel. T. J. Roswell, Trent House, Waltham Abbey, Essex.
12,123 (1914). Wheel tire. J. Stevenson, 2 Ongar Road, Earl's Court, London.
*12,130 (1914). Vehicle wheel. C. O. Vantrease, Nashville, Tenn., U. S. A.
12,139 (1914). Extrusion machine. C. J. Beaver, "Rangemoor," Crescent Road, Hale, and E. A. Claremont, Brook Cottage, High Leigh—both in Cheshire.
12,168 (1914). Infant's soother. F. Schutze, Black Bull Works, Caledonian Market, London.
12,188 (1914). Waterproof paint consisting of powdered resin, French chalk and other ingredients mixed to a thick paste with a mixture of rubber solution. W. H. Kemp, "Maureen," Crutchfield avenue, Walton-on-Thames, Surrey.

NEW ZEALAND.

[ABSTRACTED IN THE PATENT OFFICE JOURNAL, AUGUST 5, 1915.]

35,734 (1914). Rectal syringe. M. E. Le-vine, Norwich Chambers, 56 Hunter street, Sydney, N. S. W.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Date of Application).

475,784 (July 29, 1914). Process and arrangement for making metallic wires covered with a sheath or casing of gutta percha for making hat frames and for other purposes. A. Dell'Orto.
475,800 (May 29). Metallic covering for vehicle tires. P. Duret.
475,808 (July 29). Vehicle tire with metallic covers. P. E. H. Forsans.
475,841 (July 30). Elastic wheel. Chew, Sergeant and Groff.
475,850 (March 19). Tread for wheels of vehicles intended for use on soft ground. Société Schneider et Cie.
475,897 (July 31). Spare or detachable wheel. P. Berioux.
475,910 (March 29). Elastic wheel with air pistons. L. J. C. Pharaon.

475,975 (August 10). Substance to render air tubes serviceable in spite of their porosity and punctures. F. D. Bellefaye.

476,013 (August 14). Elastic tire for wheels. W. C. Wreen and J. J. Harrigan.

476,036 (March 31). Improved elastic tire for vehicle wheels. A. Bonnaz.

476,116 (August 28). Improvements made on apparatus for feeding fabric winding machines, especially for machines used by manufacturers of pneumatic tire fabrics. The Miller Rubber Co.

THE GERMAN EMPIRE.

PATENTS ISSUED (With Date of Validity).

287,094 (January 13, 1915). Needle holder for medical injection apparatus. Gustav Rudolf Schimmel, Detroit, U. S. A., represented by E. W. Hopkins, patent lawyer, Berlin SW 11.

287,093 (October 10, 1914). Liquid vaporizer. (Supplement to patent No. 284,980.) Karl Heinicke, Reichswaldallee, 7, Dusseldorf.

287,110 (October 4). Process for attaching rubber heels to shoes. Julius Bahnsen, Kaiserlautern, Palatinate.

287,150 (June 13, 1913). Sewing material for surgical purposes. Essbach, Klingenthal.

287,203 (June 5, 1914). Nozzle for hose and tubes, especially adapted to garden hose. Bernhard Schulz, Berlinerstrasse, 151 Berlin-Lichterfeld.

287,299 (July 19). Machine for manufacturing sheets from fibrous materials and cement; for instance, asbestos or cardboard or the like and cement. Birchler and Pflug, Zurich, Switzerland. Represented by Messrs. G. Dedreux, A. Weickmann and H. Kauffmann, patent lawyers, Munich.

287,382 (December 17, 1913). Nursing bottle with reinforced neck for the nipple. Carl Cade, Hollandstrasse 10, Herford-in-Westphalia.

287,478 (July 17, 1914). Hose or tube jet having a plurality of small holes; also machine for manufacturing it. Supplement to Patent No. 265,318. Dr. Carl Veltman, Kusnacht, near Zurich, Switzerland.

287,526 (September 24). Press for stamping leather and similar materials in which the stock is automatically fed to the press. United Shoe Machinery Co., Paterson, N. J., and Boston, Mass., U. S. A.; represented by Messrs. K. Hailbauer and A. Bohr, patent lawyers, Berlin SW 66.

287,547 (October 2). Interchangeable rubber heel. Otto Goltsch, Glatz-in-Silesia.

RUBBER TIRES IN BRAZIL.

The use of automobiles in Brazil is continually on the increase. Yet every tire has to be imported. The tire imports from the United States for the year 1914 amounted to but three per cent. of the total, the tire trade of Brazil for 1914—as shown by the value of its imports—being distributed as follows:

BRAZILIAN IMPORTS OF TIRES FOR 1914.

	Value.
France	$188,247
United Kingdom	100,965
Belgium	79,638
Germany	74,131
United States	15,714
Italy	11,416
All other countries	6,975
Total	$477,086

As foreign automobile tire manufacturers are largely occupied in furnishing tires to the countries at war, American manufacturers have at present an exceptional opportunity for introducing their tires in Brazil.

CHILEAN IMPORTS OF RUBBERIZED FABRICS.

It cannot be said that Chile offers a very extensive market for rubber goods, but at the same time American exports to that country ought to be much larger than they are. While eight months of the year are practically dry in Chile, during the four winter months there is quite a fall of rain, the average yearly rainfall at Valparaiso being 35 inches. The statistics for 1913, which are the latest available, show that out of an importation of over 32,000 pounds of rubberized cotton fabrics, only 44 pounds were exported from the United States. The statistics in detail are as follows:

During 1913 Chile imported 32,557 pounds of rubberized cotton fabrics valued at $18,857, of which Great Britain furnished 20,000 pounds valued at $11,579; Germany 8,937 pounds, worth $5,180; France 3,510 pounds, worth $2,034, and the United States only 44 pounds, worth $26. The total imports of woolen rubberized fabrics amounted to 2,168 pounds, valued at $4,304, of which 1,526 pounds, worth $3,031, came from Great Britain. Germany and France furnished smaller quantities, and the United States only 49 pounds, valued at $96.

UNITED KINGDOM RUBBER STATISTICS FOR MONTH ENDING AUGUST 31, 1915.

IMPORTS.

	August. 1914. Quantity.	1914. Value.	1915. Quantity.	1915. Value.
Unmanufactured—				
†Crude Rubber:				
From—				
Dutch East Indies ... *tons*	...	.....	280	$349,580
French West Africa	7	$7,577	25	26,518
Gold Coast	11	8,770	26	13,475
Other countries in Africa	...	.....	66	152,380
Peru	4	4,287	25	26,537
Brazil	363	450,594	737	882,175
British India	...	.....	38	48,134
Straits Settlements: Dependencies —Labuan	1,558	1,748,300	2,012	2,531,699
Federated Malay States	798	957,284	1,069	1,342,098
Ceylon and dependencies	680	791,361	863	1,026,773
Other countries	490	421,620	124	30,596
†Total	3,911	$4,399,793	5,265	$6,429,965
Gutta percha	123	$128,529	340	$241,262
*Waste and reclaimed	...	.....	304	$55,254
Manufactured—				
Apparel, waterproofed	...	$13,606	...	$1,285
Boots and shoes—dozen pairs	2,344	10,731	18,546	77,903
Insulated wire	...	16,673	...	37,219
Submarine cables	...	78	6	.....
Motor tires and tubes	...	136,267	...	801,665
Motorcycle tires and tubes	...	15,918	...	44,120
Cycle tires and tubes	...	3,334	...	23,014
Tires not specified	...	438	...	17,432

EXPORTS, UNITED KINGDOM.

Unmanufactured—				
*Waste and reclaimed	...	.....	445	$13,631
Manufactured—				
Apparel, waterproofed:				
To France	...	$1,484	...	$6,419
British South Africa	...	12,303	...	26,484
British East Indies	...	1,285	...	3,513
Australia	...	6,949	...	8,015
New Zealand	...	5,640	...	11,957
Canada	...	82,346	...	28,206
Other countries	...	127,731	...	74,691
Total	...	$237,738	...	$159,285
Boots and shoes—dozen pairs	9,531	$44,124	5,366	$26,688
Insulated wire	...	96,449	...	100,649
Submarine cables	...	146	...	226,959
Motor tires and tubes	...	107,433	...	193,390
Motorcycle tires and tubes	...	20,060	...	48,076
Cycle tires and tubes	...	63,352	...	154,054
Tires not specified	...	38,582	...	45,940
Manufactures not specified	...	328,523	...	405,740

EXPORTS, FOREIGN AND COLONIAL.

Unmanufactured—				
†Crude rubber:				
To Russia ... *tons*	28	$36,031	768	$912,157
Germany	291	329,282	...	.....
Belgium	109	123,565	...	.....
France	209	272,033	509	654,802
United States	975	1,116,667	2,419	3,152,874
Other countries	103	115,321	559	725,060
†Total	1,715	$1,992,929	4,255	$5,444,893
Gutta percha	14	$18,191	46	$41,121
*Waste and reclaimed	...	.....	8	2,964
Manufactured—				
Apparel, waterproofed	...	131	...	63
Boots and shoes—dozen pairs	98	774	54	7,626
Insulated wire	...	433	...	477
Motor tires and tubes	...	28,712	...	265,292
Motorcycle tires and tubes	...	1,757	...	4,234
Cycle tires and tubes	...	3,786	...	1,397
Tires not specified	...	238	...	3,304

*Included in rubber prior to 1915.
†After 1914 "Rubber" is shown under separate headings of "Raw" and "Waste" and "Reclaimed."

OUTPUT OF DUTCH RUBBER COMPANIES.

The United States Consul-General at Amsterdam, Holland, writes that reports to date of Dutch rubber producing companies show that for the first seven months of 1915 the product of these companies was much greater than for the corresponding period of 1914, and about equal to the total product of 1913.

The same consular officer reports that on August 31 the Royal Netherlands Steamship Co. began to operate steamers between Amsterdam and Callao, Peru, and Valparaiso, Chile, via the Panama Canal. Sailings will be monthly, and six or seven of the company's 50 steamers will be devoted to this service.

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF RUBBER AND MANUFACTURES OF.

ARTICLES.	July, 1915. Quantity.	July, 1915. Value.	Seven Months Ending July, 1915. Quantity.	Seven Months Ending July, 1915. Value.
India rubber, etc., and substitutes for, and manufactures of:				
Unmanufactured—				
Balata .....*pounds..free*	184,036	$79,614	1,193,313	$447,838
Guayule gum	486,485	144,940	3,973,717	1,096,040
Gutta jelutong	1,330,116	75,812	9,426,206	492,541
Gutta percha	76,800	9,809	1,051,605	130,799
India rubber 18,659,660	9,381,927	123,685,163	61,555,510	
India rubber scrap or refuse fit only for remanufacture	1,429,335	101,250	5,872,230	397,823
Total unmanufactured..	.....	$9,793,352	.....	$64,120,551
Manufactures of—				
Gutta percha.....*dutiable*	.....	$804	.....	$2,297
India rubber..... "	.....	37,260	.....	329,000
Total manufactures of..	.....	$38,064	.....	$331,297
Substitutes, elasticon and similar .....*dutiable*	.....	$1,921	.....	$12,168

IMPORTS OF CRUDE RUBBER BY COUNTRIES.

From:				
Belgium .....*pounds*	.....	.....	.....	.....
France	31,353	$15,169	164,935	$74,019
Germany	.....	.....	6,987	843
Portugal	394,973	138,502	3,153,742	1,117,055
United Kingdom	8,985,067	4,901,595	59,128,411	31,231,464
Central American States and British Honduras	80,813	36,885	771,379	345,377
Mexico	445,669	152,443	942,316	364,583
Brazil	3,263,561	1,442,383	30,551,589	13,597,284
Other South America.....	385,333	153,748	3,211,686	1,345,867
East Indies	5,064,392	2,536,146	20,758,553	10,683,860
Other countries	8,499	5,056	4,995,565	2,795,158
Total 18,659,660	$9,381,927	123,685,163	$61,555,510	

EXPORTS OF AMERICAN RUBBER GOODS.

ARTICLES.	July, 1915. Quantity.	July, 1915. Value.	Seven Months Ending July, 1915. Quantity.	Seven Months Ending July, 1915. Value.
India rubber, manufactures of:				
Scrap and old .....*pounds*	329,198	$36,465	1,662,792	$215,585
Reclaimed	528,944	66,746	3,632,278	493,762
Belting, hose and packing..	.....	240,277	.....	1,067,917
Boots and shoes—				
Boots .....*pairs*	4,638	14,160	113,572	262,474
Shoes	125,629	64,578	1,178,230	993,156
Tires—				
For automobiles	.....	889,354	.....	4,297,983
All other	.....	276,202	.....	659,795
All other manufactures of..	.....	436,998	.....	2,606,043
Total	.....	$2,024,780	.....	$10,596,715

EXPORTS OF AUTOMOBILE TIRES BY COUNTRIES.

Tires for automobiles:				
Germany	.....	.....	.....	.....
England	.....	$548,729	.....	$2,477,883
Canada	.....	66,409	.....	522,234
Mexico	.....	41,788	.....	165,627
Cuba	.....	8,027	.....	65,451
Australia	.....	34,089	.....	220,631
Philippine Islands	.....	22,107	.....	172,857
Other countries	.....	168,205	.....	673,300
Total	.....	$889,354	.....	$4,297,983

EXPORTS OF FOREIGN MERCHANDISE.

India rubber, etc., and substitutes for, and manufactures of:				
Unmanufactured:				
Balata .....*pounds..free*	93,863	$38,145	690,083	$270,220
Guayule gum	.....	.....	29,891	8,931
Gutta percha	43,181	7,182	49,178	10,297
India rubber	238,473	130,370	3,040,808	1,151,440
India rubber scrap.....	.....	.....	3,483	373
Total unmanufactured.	.....	$175,697	.....	$1,841,261
Manufactures of india rubber .....*dutiable*	.....	$122	.....	$3,795

IMPORTS OF CRUDE AND MANUFACTURED RUBBER AT THE PORT OF NEW YORK.

The Quantity Is Given in Packages.

Week Ending—	India Rubber. Quantity.	India Rubber. Value.	Rubber Waste. Quantity.	Rubber Waste. Value.	Rubber Manufactures. Quantity.	Rubber Manufactures. Value.	Rubber Substitutes. Quantity.	Rubber Substitutes. Value.	Chicle. Quantity.	Chicle. Value.
August 21, 1915.....	27,883	$2,238,796	...	$4,604	78	$10,999	..	...	57	$6,220
August 28	22,844	1,724,485	66	1,833	71	4,514	9	$486	...	...
September 4	23,290	2,090,213	155	6,018	29	2,717	..	...	2,395	135,322
September 11	30,832	2,092,324	376	14,951	28	2,664	..	...	485	32,148
September 18	12,639	647,569	305	3,457	12	2,380	..	...	28	1,879

EXPORTS OF RUBBER AND RUBBER MANUFACTURES FROM THE PORT OF NEW YORK.

(The quantity is given in packages unless otherwise specified.)

June 1 to July 31, 1915.

MANUFACTURES. TO—	Rubber Goods, Not Specified. Quantity.	Rubber Goods, Not Specified. Value.	Hose. Quantity.	Hose. Value.	Packing. Quantity.	Packing. Value.	Dress Shields. Quantity.	Dress Shields. Value.	Tires. Quantity.	Tires. Value.	Rubber Cement. Quantity.	Rubber Cement. Value.
Aden	...	...	6	$1,019	...	...	...	...	...	...	...	...
Africa	825	$56,778	335	21,476	112	$11,392	...	...	...	...	...	...
Argentine	502	55,789	18	2,323	1	300	...	...	...	...	106	$1,988
Australia	1,446	79,148	9	479	28	3,301	...	...	...	...	...	...
Brazil	600	40,301	3	243	11	1,365	...	...	...	...	6	153
British Guiana	36	1,354	4	209	...	...	...	...	...	...	...	...
Canada	240	8,605	31	2,402	...	...	...	...	...	...	...	...
Central America	773	39,337	49	3,442	55	951	...	...	...	...	...	...
Chile.....	501	21,350	12	1,337	31	1,056	...	...	...	...	3	137
China	136	4,573	2	204	13	1,530	...	...	...	...	...	...
Colombia	68	4,827	...	...	...	...	...	...	...	...	...	...
Curacao	9	382	...	...	...	...	...	...	...	...	...	...
Dutch Guiana	12	1,250	...	...	...	...	...	...	...	...	...	...
East Indies	124	8,455	...	...	...	...	...	...	...	...	...	...
Ecuador	58	2,324	...	...	...	...	...	...	...	...	...	...
France	1,371	51,515	...	...	3	800	...	...	...	...	27	807
Great Britain	7,687	473,207	...	...	13	991	176	$31,879	...	...	...	...
Greece	3	659	...	...	...	...	...	...	...	...	...	...
Holland	156	3,924	...	...	...	...	...	...	...	...	...	...
India	35	2,113	...	...	...	...	...	...	...	...	...	...
Italy	2,993	66,317	...	...	...	...	...	...	...	...	...	...
Japan	100	5,476	...	...	14	855	...	...	...	...	...	..
Java	2	452	...	...	...	...	...	...	...	...	...	...
Mexico	135	12,982	12	908	38	1,732	...	...	...	...	...	...
New Zealand	115	8,328	...	...	...	...	...	...	...	...	...	...
Norway, Sweden and Denmark....	251	26,916	...	...	7	757	...	...	12	$224	...	...
Peru	121	12,056	16	1,844	27	1,494	...	...	...	...	...	...
Philippines	142	14,530	...	...	24	1,464	...	...	...	...	...	...
Portugal	2	194	...	...	...	...	...	...	...	...	...	...
Russia	212	10,586	...	...	1	118	...	...	...	...	...	...
Siam	13	820	...	...	...	...	...	...	...	...	...	...
Singapore	9	799	6	3,720	...	...	...	...	...	...	...	...
Spain	92	7,177	3	298	...	...	...	...	...	...	...	...
Switzerland	1	138	...	...	...	...	...	...	...	...	...	...
Turkey in Asia.....	2	311	...	...	...	...	...	...	...	...	...	...
Uruguay	47	6,160	...	...	...	...	...	...	...	...	...	...
Venezuela	189	9,206	...	...	...	...	...	...	...	...	...	...
West Indies	5,138	233,250	66	3,349	101	8,081	...	...	4	155	7	395
Total.....		$1,271,589		$43,253		$36,187		$31,879		$379		$3,480

UNMANUFACTURED. TO—	Crude Rubber. Quantity.	Crude Rubber. Value.	Balata. Bales.	Balata. Value.	Rubber Substitute. Quantity.	Rubber Substitute. Value.	Reclaimed Rubber. Quantity.	Reclaimed Rubber. Value.	Rubber Scrap. Bales.	Rubber Scrap. Value.
Australia	...	...	...	...	8	$525	...	...	...	...
Great Britain	51,868	$29,568	210	$15,840	5	250	762	$26,182	335	$21,235
Japan	...	...	...	...	54	1,280	12	683	...	...
Total.....		$29,568		$15,840		$2,055		$26,865		$21,235

Review of the Crude Rubber Market.

NEW YORK.

SEPTEMBER 30, 1915.

EARLY in the month spot quotations were steady but futures were unsettled and prices nominal. The market was quiet and buying confined to special lots at figures that reflected the far from normal condition of the market. There was a noticeable lack of real demand and as supplies were plentiful the natural result was easier prices. On September 7, First latex spot was quoted at 58¾ cents, and Upriver fine at 56 cents, although sales at 54 cents were reported.

There was no change noted during the first two weeks of the month. Inquiries were plentiful, but the volume of actual buying was not up to the hopeful expectations for big September business.

About September 16 the market developed a firmer tone and continued strong until the 20th, when higher prices were recorded for plantations, First latex and Smoked sheet spot selling at 59 cents, while Upriver fine had fallen off and was quoted at 55½ cents.

The market stiffened up during the last week of the month and considerable interest developed in futures, particularly for October and December. A fair business in Pará sorts was done and Upriver fine, November and December delivery was sold at 54 cents. The market continued firm and the month closes with First latex spot, selling at 60 cents and Smoked sheet at 59½ cents, while Upriver fine is offered at 55 cents.

The Booth Line steamer "Francis" is now due with 180 tons of rubber. The steamship "Atahualpa" of this same line, with 100 tons from Iquitos, will receive rubber at Manáos and Pará, arriving in New York October 10.

LONDON.

Early in September there was marked activity in buying orders for all spot and future grades, which developed a steady market and firm prices. Sales of First latex, spot, were made at 2*s.* 4¼*d.* Smoked sheet, spot, was selling at 2*s.* 4¼*d.* Hard Pará was steady at 2*s.* 4½*d.*

There was little change as the month progressed and excepting the usual fluctuations of a quiet market there was little to record. By the middle of the month prices had eased off. First latex and Smoked sheet, spot, were quoted at 2*s.* 4*d.* and Hard Pará was easy at 2*s.* 4¼*d.* Considerable interest developed in plantations during the fourth week of the month and resulted in a firmer and more active market. First latex, spot, was selling at 2*s.* 4¼*d.* and Smoked sheet, spot, was quoted at 2*s.* 4⅛*d.*

A small increase of 249 tons is shown in London stocks at the end of August, 1915. Imports were 3,901 tons and deliveries were 3,652. Total imports for the eight months were 43,490 tons, and deliveries were 44,084 tons.

PARA AND MANAOS.

Recent reports from Manáos indicate that arrivals in July and August of this year were large, and for September and October they are expected to be above the average. If a large crop should be realized and exchange remain at a low figure, it would mean a prosperous year for the Amazon valley. With exchange at 12*d.* (24 cents) as compared with 16*d.* (32 cents) the rate before the war, the Amazon exporter can do business at remunerative prices.

Receipts at Pará were 2,245 tons in August against 1,290 tons in July and 1,620 tons a year ago. The total for eight months was 24,575 tons against 25,610 tons. The decrease was entirely in caucho. The Amazon crop year ended June 30, and 35,305 tons were produced against 39,115 tons in 1913-14, a decrease of 3,810 tons. The difference is due to the falling off in the output of caucho.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and September 30, the current date:

PARA.	Oct. 1, '14.	Sept. 1, '15.	Sept. 29, '15.
Upriver, fine, new	63 @65	57 @	54½@55
Upriver, fine, old	66 @68	58 @	56 @57
Islands, fine, new	48 @50	50½@	50 @51
Islands, fine, old	50 @52	52 @53	52 @
Upriver, coarse, new	44 @45	43 @	41½@42
Upriver, coarse, old	.....	43½@	43 @
Islands, coarse, new	26 @28	27 @28	26 @27
Islands, coarse, old	28 @29	.....	28 @
Cameta	28 @29	28½@29	27½@28
Caucho, upper	44 @45	42½@43	42½@
Caucho, lower	41 @43	40 @41	40 @41
PLANTATION HEVEA.			
Smoked sheet ribbed	63 @64	58½@59	59½@
First latex crepe { Near by / Forward	61 @62 / 59 @60	59 @60	59½@60
Fine sheets and biscuits unsmoked	59 @60	57 @58	57 @57¾
CENTRALS.			
Corinto	40 @42	40 @	39 @40
Esmeralda, sausage	40 @41	40 @	38½@39
Nicaragua, scrap	40 @41	38 @39	38½@39
Mexican plantation, sheet	35 @45	.....	.....
Mexican, scrap	39 @41	40 @41	39 @40
Mexican, slab	24 @29	.....	.....
Manicoba, scrap	38 @39	35 @40	33 @36
Mangabeira, sheet	34 @39	35 @40	32 @38
Guayule	45 @50	32 @33	26 @30
Balata, sheet	54 @56	55 @56	51 @52
Balata, block	43 @47	45 @47	43 @
AFRICAN.			
Lopori, ball, prime	.....	53 @54	52 @53
Upper Congo, ball red	.....	51 @53	50 @57
Massai, red	.....	50 @52	51 @52½
Soudan Niggers	.....	.....	44 @45
Cameroon, ball	42 @44	44 @	.....
Benguela	.....	31 @	31 @32
Accra, flake	.....	23 @23½	24 @25
Rio Nunez Niggers	.....	52½@53	53 @53½
Konakry Niggers	.....	51 @52	51 @52
EAST INDIAN.			
Assam	52 @58	42 @	45 @47
Pontianak	8 @ 9	6¾@ 7	6¾@ 7
Gutta Siak	.....	12½@14	11⅛@12
Borneo II	.....	30 @	.....
Gutta Percha	.....	2.00@ 2.50	2.00@ 2.40

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows:

"The same easy conditions have prevailed in the money market during September as for several months previously, and the demand for paper has been good, both from banks in this city and elsewhere, the best rubber names being taken at 4@4½ per cent., and those not so well known 5@5½ per cent."

NEW YORK PRICES FOR AUGUST (NEW RUBBER).

	1915.	1914.	1913.
Upriver, fine	$0.56@0.59	$0.75@1.15	$0.84@0.94
Upriver, coarse	.42@ .44	.43@ .89	.51@ .53
Islands, fine	.50@ .52	.60@1.00	.74@ .81
Islands, coarse	.27@ .28	.30@ .60	.29@ .33
Cametá	.29@ .31	.32@ .61	.38@ .41

RUBBER STATISTICS FOR LONDON AND LIVERPOOL, AUGUST, 1915.

			Stocks.		
London—	Imports.	Deliveries.	1913.	1914.	1915.
Plantation ...tons	4,066	3,680	3,138	3,524	5,131
Other kinds	53	62	1,017	748	455
Total	4,119	3,742	4,155	4,272	5,586
Liverpool—					
Para	606	733	764	598	819
Other kinds	178	139	1,134	874	490
Total	784	872	1,898	1,472	1,309
Total London and Liverpool	4,903	4,614	6,053	5,744	6,895

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to August 16, 1914 and 1915. Compiled by the Ceylon Chamber of Commerce.)

To—	1914.	1915.
Great Britain ..... *pounds*	9,867,203	14,710,294
United States	5,255,053	8,567,536
Belgium	2,936,870	.....
Germany	1,037,415	.....
Australia	339,603	393,497
France	250,712	234,272
Japan	215,100	215,929
Russia	105,212	332,200
Straits Settlements	42,535	119,933
Italy	1,772	.....
India	1,050	1,000
Canada	.....	340,140
Total	20,052,525	24,914,801

(Same period 1913, 13,754,468 pounds; same period 1912, 6,957,230.)

The export figures of rubber given in the above table for 1914 include the imports re-exported. (These amount to 2,538,771 pounds.) To arrive at the total quantity of Ceylon rubber exported for that period deduct these imports from the total exports. The figures for 1915 are for Ceylon rubber only.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. June 30.	Malacca. July 31.	Penang. June 30.	Port Swettenham. August 1.	TOTAL.
Great Britain..*pounds*	16,880,281	4,834,058	11,308,531	16,526,627	49,549,497
Continent	2,978,194	.....	638,799	20,160	3,637,153
Japan	896,841	.....	.....	.....	896,841
Ceylon	115,066	.....	266,533	925,695	1,307,294
United States	13,254,393	.....	408,133	.....	13,662,526
Australia	242,326	.....	.....	.....	242,326
Total	34,367,101	4,834,058	12,621,996	17,472,482	69,295,637
Same period, 1914.	18,511,130	2,932,923	10,407,734	17,444,472	49,296,259
Same period, 1913.	11,421,866	.....	6,988,266	15,202,528	33,612,660
Same period, 1912.	5,911,343	.....	3,966,968	9,998,195	19,876,506

SINGAPORE.

Guthrie & Co., Ltd., report [August 11, 1915]:

The record quantity of 296 tons catalogued for the auction held today met with a fairly steady demand, about 160 tons changing hands.

Fine pale crepe was again wanted, the top price of the sale viz.: $133, being paid for one very fine lot. Fine ribbed smoked sheet sold up to $130, a decline of $2. Plain smoked sheet was unchanged for the week, all parcels offered being readily taken.

The lower grades, with the exception of dark crepe, marked declines of from $1 to $6.

The demand for scrap was better than for some time past, virgin and pressed marking substantial increases.

The following was the course of values:

	In Singapore Picul.*	Sterling equivalent per pound in London.	Equivalent per pound in cents.
Sheet, fine ribbed smoked....	$128@130	2/ 5⅞@2/ 6¼	60.56@61.32
Sheet, fair to good ribbed smoked	126@127	2/ 5½@2/ 5⅝	59.80@60.05
Sheet, plain, smoked.....	119@127	2/ 4 @2/ 5⅜	56.76@60.05
Sheet, unsmoked	112@120	2/ 2½@2/ 4¼	53.72@57.27
Crepe, fine pale.....	130@133	2/ 6¼@2/ 7	61.32@62.84
Crepe, good pale.....	123@129	2/ 4⅞@2/ 6⅛	58.53@61.06
Crepe, fine brown.....	119@126	2/ 4 @2/ 5½	56.76@59.80
Crepe, good brown.....	113@119	2/ 2¾@2/ 4	54.22@56.76
Crepe, dark	109@117	2/ 1⅞@2/ 3½	52.45@55.75
Crepe, bark	98@113	1/11½@2/ 2¾	47.64@54.22
Scrap, virgin	83@104	1/ 8½@2/ 0⅞	41.30@50.42
Scrap, pressed	90@ 91	1/ 9⅞@1/10½	44.34@44.85
Scrap, loose	80@ 94	1/ 7⅛@1/10¾	40.29@46.12

* Picul = 133⅓ pounds.
Quoted in S. S. dollars = 2/4 [56 cents].

STRAITS SETTLEMENTS RUBBER EXPORTS.

An official cablegram received from the Colonial Secretary, Singapore, announces that the export of plantation rubber from the Straits Settlements during the month of August amounted to 2,295 tons, as compared with 2,324 tons in July and 1,325 tons in the corresponding month last year.

The following is a comparative table showing the export for three years:

	1913.	1914.	1915.
January ..... *tons*	784	1,181	2,576
February	743	1,703	2,741
March	898	1,285	2,477
April	762	1,548	1,978
May	814	1,309	3,588
June	812	1,480	2,249
July	1,120	1,584	2,324
August	1,315	1,325	2,295
Total	7,248	11,415	20,228

These figures include transhipments of rubber from various places in the neighborhood of the Straits Settlements, such as Borneo, Java, Sumatra and the non-Federated Malay States, as well as rubber actually exported from the Colony, but do not include rubber exports from the Federated Malay States.

PLANTATION RUBBER EXPORTS FROM JAVA AND MADURA.

		June.		Six Months Ending June 31.	
EXPORTS TO—		1914.	1915.	1914.	1915.
Holland	Ficus ... *pounds*	6,565	330	3,000	22,359
	Hevea	312,083	189,820	1,464,445	975,108
	To order—Hevea	86,704	.....	384,608	4,794
	Ceara	63,997	.....	114,325	11,048
	Castilloa	5,227	1,760	32,874	2,248
	Total	474,576	191,910	1,999,252	1,015,557
Great Britain....	Ficus	4,684	499	38,203	12,705
	Hevea	377,676	371,342	1,730,848	2,166,879
	Ceara	1,527	1,998	26,774	9,788
	Castilloa	2,440	8,866	19,520	56,190
	Total	386,327	382,705	1,815,345	2,245,562
Belgium	Ficus	.....	.....	462	.....
	Hevea	83,624	.....	406,520	.....
	Total	83,624	.....	406,982	.....
United States...	Hevea	20,854	572,462	88,389	3,160,676
	Ceara	.....	.....	.....	8,692
	Total	20,854	572,462	88,389	3,169,368
Germany	Hevea	25,166	.....	60,830	.....
	Castilloa	.....	.....	2,735	.....
	Total	25,166	.....	63,565	.....
Singapore	Ficus	.....	6,037	328	9,299
	Hevea	20,922	76,217	114,138	294,897
	Ceara	.....	.....	260	.....
	Total	20,922	82,254	114,726	304,196
Japan	Hevea	.....	3,300	.....	194,762
Australia	Hevea	.....	14,001	.....	86,625
Other Countries.	Hevea	.....	433	.....	433
	Grand total...	1,011,469	1,247,065	4,488,259	7,016,503

THE RUBBER PRODUCTION OF PERU.

The following statistics of the rubber production of Peru and the rubber exported from that country to the United States in 1913, via Iquitos, Mollendo and Callao, have been compiled by the United States Rubber Export Co., Limited, of New York:

	Production.	Exports to the United States.
Caucho ..... *pounds*	11,574	.....
Caucho, white	33,284	3,159
Caucho, sheet	31,557	.....
Gum, fine	1,126	.....
Gum, sapote	273	273
Peruvian, weak	571,395	71,357
Peruvian, medium	22,306	849
Peruvian, fine	1,546,288	114,895
Peruvian tails	783,457	.....
Caucho, ball	2,635,026	632,825
Peruvian, coarse	485,445	27,771
Total	6,121,731	851,129

The same company's estimate of the world's consumption of crude rubber is given below:

WORLD'S CONSUMPTION OF CRUDE RUBBER, 1913.

Brazil ..... *tons*	647
Canada	1,780
Japan	2,000
Denmark, Sweden and Norway.....	2,500
Italy	3,327
Belgium	3,686
Austria-Hungary	6,500
France	9,700
Russia	10,293
United Kingdom	17,980
Germany	18,832
United States	47,500
Switzerland	1,514
Total	126,259

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weights in Pounds.]

AUGUST 16.—By the steamer *Gregory*, from Manáos:

	Fine.	Medium	Coarse.	Caucho.	TOTAL.
Meyer & Brown	46,600	10,400	10,200	20,600=	87,800
Arnold & Zeiss	114,500	11,900	23,700	114,700=	264,800
Henderson & Korn	117,500	4,300	22,500	10,700=	155,000
General Rubber Co	44,500	6,200	3,800	.....=	54,500
Robinson & Co	45,700	.....	.....	.....=	45,700
H. A. Astlett & Co	22,200	8,400	.....	.....=	30,600
Total	391,000	41,200	60,200	146,000=	638,400

AUGUST 16.—By the steamer *Gregory* from Iquitos:

G. Amsinck & Co	.....	.....	700	207,300=	208,000
Chartered Bank of Spanish America	.....	.....	.....	119,100=	119,100
H. C. Rupper	1,100	.....	2,000	14,100=	17,200
W. R. Grace & Co	6,600	800	2,000	7,500=	16,900
H. A. Astlett & Co	.....	.....	300	8,300=	8,600
Toledano Exporting Co	1,100	.....	800	1,800=	3,700
Total	8,800	800	5,800	358,100=	373,500

AUGUST 30.—By the steamer *Denis* from Pará and Manáos:

Meyer & Brown	114,700	13,000	83,000	46,400=	257,100
Arnold & Zeiss	136,300	8,100	87,600	29,900=	261,900
Robinson & Co	123,300	.....	200	51,600=	175,100
Henderson & Korn	54,500	13,600	19,800	29,800=	117,700
General Rubber Co	68,100	6,600	8,000	1,000=	83,700
W. R. Grace & Co	15,000	.....	.....	20,700=	35,700
Hagemeyer & Brunn	10,400	1,100	21,800	.....=	33,300
J. T. Johnstone & Co	10,000	1,800	11,900	.....=	23,700
H. A. Astlett & Co	11,600	6,600	2,600	.....=	20,800
G. Amsinck & Co	11,200	1,200	7,200	.....=	19,600
Cowdrey & Co	10,100	.....	2,000	400=	12,500
Aldens' Successors, Ltd	.....	.....	2,500	3,000=	5,500
Total	565,200	52,000	246,600	182,800=	1,046,600

SEPTEMBER 1.—By the steamer *Sao Paulo* from Pará:

Meyer & Brown	45,500	4,700	15,500	33,500=	99,200
H. A. Astlett & Co	4,100	17,200	58,400	75,200=	154,900
Henderson & Korn	35,700	.....	40,000	17,300=	93,000
General Rubber Co	36,700	4,500	15,600	3,400=	60,200
Robinson & Co	10,700	1,100	33,000	.....=	44,800
Arnold & Zeiss	13,100	2,000	23,700	1,600=	40,400
Rumsey & Greutert Co., Inc.	9,300	2,500	1,900	19,500=	33,200
W. R. Grace & Co	14,000	.....	900	400=	15,300
G. Amsinck & Co	5,600	.....	200	300=	6,100
Total	174,700	32,000	189,200	151,200=	547,100

SEPTEMBER 22.—By the steamer *Stephen* from Pará and Manáos:

Meyer & Brown	223,100	40,500	115,600	60,600=	439,800
Arnold & Zeiss	327,900	20,700	62,900	105,600=	517,100
Henderson & Korn	145,700	26,200	92,600	13,600=	278,100
General Rubber Co	170,100	17,900	71,300	.....=	259,300
Hagemeyer & Brunn	154,400	700	37,700	9,500=	202,300
H. A. Astlett & Co	106,400	7,000	29,300	22,700=	165,400
Robinson & Co	110,100	700	300	8,800=	119,900
G. Amsinck & Co	20,000	1,100	21,100	1,300=	43,500
J. T. Johnstone & Co	.....	.....	26,400	.....=	26,400
W. R. Grace & Co	22,000	.....	.....	.....=	22,000
Muller, Schall & Co	8,300	.....	2,700	4,500=	15,500
Total	1,288,000	114,800	459,900	226,600=	2,089,300

PARA RUBBER VIA EUROPE.

AUGUST 30.—By the *Advance*=Colon: (POUNDS.)

W. R. Grace & Co. (Coarse)	13,500	
Neuss, Hesslein & Co. (Fine)	3,500	17,000

SEPTEMBER 1.—By the *Hypatia*=Montevideo:

A. D. Straus & Co. (Fine)	25,000	
A. D. Straus & Co. (Coarse)	3,000	
G. Amsinck & Co. (Fine)	4,000	
G. Amsinck & Co. (Coarse)	1,000	33,000

SEPTEMBER 3.—By the *Panama*=Colon:

G. Amsinck & Co. (Fine)	4,900	
W. R. Grace & Co. (Fine)	1,200	6,100

SEPTEMBER 7.—By the *Mayaro*=Ciudad Bolivar:

Yglesias, Lobo & Co. (Fine)	10,000	
Yglesias, Lobo & Co (Coarse)	3,500	13,500

SEPTEMBER 7.—By the *Pastores*=Cristobal:

G. Amsinck & Co. (Fine)	25,000	
G. Amsinck & Co. (Coarse)	2,500	27,500

SEPTEMBER 13.—By the *Hostilius*=Montevideo:

G. Amsinck & Co. (Fine)	7,000	
G. Amsinck & Co. (Coarse)	100	7,100

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

AUGUST 23.—By the *Tenadores*=Port Limon:

A. A. Linde & Co	200	
Isaac Brandon & Bros	1,500	
Suzarte & Whitney	800	2,500

AUGUST 23.—By the *Antilles*=New Orleans:

E. Steiger & Co		6,000

AUGUST 27.—By the *Santa Marta*=Colombia:

G. Amsinck & Co	1,000	
Maitland, Coppell & Co	500	
Pottberg, Ebeling & Co	500	2,000

AUGUST 30.—By the *Advance*=Colon:

G. Amsinck & Co	23,500	
Lawrence Johnson & Co	9,600	
Neuss, Hesslein & Co	2,000	
W. R. Grace & Co	1,200	
Pablo, Calvet & Co	1,200	
Dumarest Bros.	1,300	
Andean Trading Co	6,600	
American Trading Co	800	
Gontard & Co	2,600	
Mecke & Co	600	49,400

AUGUST 30.—By the *Morro Castle*=Mexico:

Lawrence Johnson & Co	3,000	
General Export & Commission Co.	1,500	
H. Marquardt & Co	10,000	
Diez & Co	5,000	
P. Fremari	1,000	20,500

AUGUST 30.—By the *Momus*=New Orleans:

E. Steiger & Co		12,000

SEPTEMBER 1.—By the *Sao Paulo*=Bahia:

Adolph Hirsch & Co	16,000	
Lawrence Johnson & Co	28,000	
J. H. Rossbach & Bros	2,500	
Various	8,000	54,500

SEPTEMBER 1.—By the *Purus*=Bahia: (POUNDS.)

Adolph Hirsch & Co		68,000

SEPTEMBER 2.—By the *Antilles*=New Orleans:

Various		3,000

SEPTEMBER 3.—By the *Panama*=Colon:

G. Amsinck & Co	100	
H. Wolff & Co	3,200	
Mecke & Co	1,800	
Pablo, Calvet & Co	3,600	
J. S. Sembrada & Co	600	
A. M. Capen's Sons	1,700	
W. R. Grace & Co	2,600	
C. E. Griffin	3,400	
Lawrence Johnson & Co	1,800	18,800

SEPTEMBER 3.—By the *Almirante*=Cartagena:

G. Amsinck & Co	1,500	
A. Held	1,500	
H. Wolff & Co	500	3,500

SEPTEMBER 7.—By the *Tivives*=Puerto Barrios:

A. Rosenthal & Sons	5,000	
W. R. Grace & Co	500	5,500

SEPTEMBER 7.—By the *Pastores*=Cristobal:

F. W. Dunbar	3,000	
Isaac Brandon & Bros	500	3,500

SEPTEMBER 7.—By the *Matanzas*=Mexico:

R. Fabien & Co		1,000

SEPTEMBER 10.—By *El Oriente*=Galveston:

Various		*16,000

SEPTEMBER 10.—By the *Alliance*=Colon:

H. Wolff & Co	7,000	
G. Amsinck & Co	1,800	
A. M. Capen's Sons	2,200	
Pablo, Calvet & Co	2,100	
J. S. Sembrada & Co	800	
Isaac Brandon & Bros	500	
Pottberg, Ebeling & Co	300	14,700

SEPTEMBER 13.—By the *Mexico*=Mexico:

H. Marquardt & Co	4,000	
G. Amsinck & Co	500	
Graham, Hinckley & Co	500	5,000

SEPTEMBER 13.—By the *Arapahoe*=Galveston:

Various		*120,000

SEPTEMBER 13.—By the *Creole*=New Orleans:

E. Steiger & Co		10,000

SEPTEMBER 13.—By the *Calamares*=Port Limon:

A. A. Linde & Co	1,000	
Kunhardt & Co	1,000	
Isaac Brandon & Bros	500	2,500

SEPTEMBER 14.—By the *Cristobal*=Colon:

G. Amsinck & Co	10,500	
Gontard & Co	9,300	
Brodermann & Litzrodt	300	
Meyer Hecht	100	20,200

SEPTEMBER 15.—By the *Medina*=Galveston:

Various		*300,000

SEPTEMBER 15.—By the *Asiatic Prince*=Bahia:

J. H. Rossbach Bros		12,000

SEPTEMBER 16.—By the *Momus*=New Orleans: (POUNDS.)

E. Steiger & Co		6,000

SEPTEMBER 18.—By the *Esperanza*=Mexico:

H. Marquardt & Co		1,000

SEPTEMBER 15.—By the *Comus*=New Orleans:

E. Steiger & Co		21,000

SEPTEMBER 20.—By the *Sixaola*=Puerto Cortez:

A. Rosenthal & Sons	5,000	
Eggers & Heinlein	300	
G. Amsinck & Co	200	5,500

SEPTEMBER 20.—By the *Tenadores*=Port Limon:

Muller, Schall & Co	1,000	
A. A. Linde & Co	600	
Isaac Brandon & Bros	400	2,000

AFRICANS.

SEPTEMBER 3.—By the *Roma*=Lisbon:

S. R. Sequerra		80,000

SEPTEMBER 4.—By the *Saxonia*=Liverpool:

Meyer & Brown		11,200

SEPTEMBER 7.—By the *Rochambeau*=Bordeaux:

Various		40,000

SEPTEMBER 9.—By the *New York*=Liverpool:

Arnold & Zeiss	97,000	
General Rubber Co	15,000	112,000

SEPTEMBER 10.—By the *Lapland*=Liverpool:

Aldens' Successors, Ltd	67,000	
Various	4,200	71,200

SEPTEMBER 16.—By the *Den of Ogil*=Liverpool:

Robert Badenhop		11,200

SEPTEMBER 17.—By the *Baltic*=Liverpool:

Rubber & Guayule Agency, Inc.	11,200	
General Rubber Co	50 000	
Aldens' Successors, Ltd	102,000	
Various	23,000	186,200

SEPTEMBER 20.—By the *Orduna*=Liverpool:

Rubber Trading Co		11,200

SEPTEMBER 22.—By the *Moncenisio*=Lisbon:

S. R. Sequerra	4,500	
Various	22,500	27,000

EAST INDIAN.

[*Denotes plantation rubber.]

AUGUST 26.—By the *Lancastrian*=London: (POUNDS.)

Firestone Tire & Rubber Co	*67,000	
Charles T. Wilson Co., Inc.	*22,500	*89,500

AUGUST 26.—By the *Nieuw Amsterdam*=Rotterdam:

Rubber Trading Co		*30,000

AUGUST 27.—By the *Cloughton*=London:

Meyer & Brown	*56,000	
The B. F. Goodrich Co	*400,000	
General Rubber Co	*200,000	
Robinson & Co	*18,000	
W. H. Stiles	*11,200	
J. T. Johnstone & Co	*5,600	*690,800

AUGUST 27.—By the *Philadelphian*=London:

General Rubber Co	*255,000	
Goodyear Tire & Rubber Co	*125,000	
Aldens' Successors, Ltd	*23,000	*403,000

AUGUST 30.—By the *Glenstrae*=London:

The B. F. Goodrich Co.	*560,000	
Rumsey & Greutert Co., Inc.	*3,000	
Robinson & Co.	*7,000	
Aldens' Successors, Ltd.	*2,200	
Hadden & Co.	*6,000	
Rubber Trading Co.	*10,000	
L. Littlejohn & Co.	*94,000	
W. R. Grace & Co.	*2,200	
Edward Maurer Co., Inc.	*38,000	
Various	*14,000	*736,400

AUGUST 30.—By the *Celebes*=Batavia:

Meyer & Brown	*145,000	
Edward Maurer Co., Inc.	*220,000	
G. Amsinck & Co.	*12,500	
General Rubber Co.	*35,000	
Aldens' Successors, Ltd.	*30,000	
Manhattan Rubber Mfg. Co.	*11,200	
Rubber Trading Co.	*111,000	
Robinson & Co.	*10,000	
Goodyear Tire & Rubber Co.	*290,000	
L. Littlejohn & Co.	*192,500	
Various	*156,500	*1,213,700

SEPTEMBER 3.—By the *Ardgorm*=London:

Goodyear Tire & Rubber Co.	*80,000	
Edward Maurer Co., Inc.	*5,600	*85,600

SEPTEMBER 3.—By the *Manhattan*=London:

Meyer & Brown	*56,000	
Edward Maurer Co., Inc.	*50,000	
W. H. Stiles	*11,200	
General Rubber Co.	*35,000	
Charles T. Wilson Co., Inc.	*70,000	
L. Littlejohn & Co.	*66,500	*288,700

SEPTEMBER 7.—By the *Merton Hall*=Colombo:

Meyer & Brown	*25,100	
L. Littlejohn & Co.	*51,870	
W. H. Stiles	*30,000	
Arnold & Zeiss	*45,000	
Robinson & Co.	*6,000	
Edward Maurer Co., Inc.	*56,000	
Various	*23,130	*237,100

SEPTEMBER 7.—By the *Walton Hall*=Singapore:

Arnold & Zeiss	*30,000	
Henderson & Korn	*170,000	
Edward Maurer Co., Inc.	*25,000	
Aldens' Successors, Ltd.	*38,000	
Goodyear Tire & Rubber Co.	*135,000	
The B. F. Goodrich Co.	*112,000	
J. T. Johnstone Co.	*60,000	
F. Stern & Co.	*56,000	
L. Littlejohn & Co.	*187,402	
General Rubber Co.	*15,000	
Charles T. Wilson Co., Inc.	*45,000	
Hood Rubber Co.	*22,500	
Robert Badenhop	*168,000	
W. R. Grace & Co.	*2,200	
Various	*12,098	*1,078,200

SEPTEMBER 7.—By the *St. Kentigern*=London:

The B. F. Goodrich Co.	*500,000	
J. T. Johnstone & Co.	*65,000	
L. Littlejohn & Co.	*57,000	
Rubber Trading Co.	*9,500	
Aldens' Successors, Ltd.	*11,200	
Michelin Tire Co.	*11,200	*653,900

SEPTEMBER 10.—By the *Samland*=London:

Goodyear Tire & Rubber Co.	*33,500	
L. Littlejohn & Co.	*3,360	
Various	*11,640	*48,500

SEPTEMBER 11.—By the *Australian Transport*=Colombo:

Meyer & Brown	*40,000	
L. Littlejohn & Co.	*112,500	
Arnold & Zeiss	*90,000	
Robinson & Co.	*10,000	
Edward Maurer Co., Inc.	*22,500	
J. T. Johnstone & Co.	*35,000	
W. R. Grace & Co.	*11,200	
W. H. Stiles	*6,000	
Rubber Trading Co.	*4,000	
Various	*148,500	*479,700

SEPTEMBER 11.—By the *Den of Airlie*=London:

Meyer & Brown	*70,000	
The B. F. Goodrich Co.	*560,000	
General Rubber Co.	*190,000	
L. Littlejohn & Co.	*60,000	
Robinson & Co.	*18,000	
Rumsey & Greutert Co., Inc.	*16,000	
W. H. Stiles	*11,200	
Various	*5,000	*930,200

SEPTEMBER 16.—By the *Mesaba*=London:

Meyer & Brown	*36,000	
Rumsey & Greutert Co., Inc.	*5,000	
General Rubber Co.	*190,000	
Edward Maurer Co., Inc.	*35,000	
L. Littlejohn & Co.	*47,540	
W. H. Stiles	*18,000	*331,540

SEPTEMBER 17.—By the *St. Ronald*=Singapore:

Charles T. Wilson Co., Inc.	*70,000	
W. R. Grace & Co.	*35,000	
Robert Badenhop	*100,000	
J. T. Johnstone & Co.	*13,500	
Aldens' Successors, Ltd.	*103,000	
The B. F. Goodrich Co.	*190,000	
Boustead & Co.	*15,000	
Henderson & Korn	*235,000	
L. Littlejohn & Co.	*386,239	
Edward Maurer Co., Inc.	*45,000	
Goodyear Tire & Rubber Co.	*250,000	*1,142,739

SEPTEMBER 17.—By the *Baltic*=Liverpool:

Arnold & Zeiss		*8,500

SEPTEMBER 18.—By the *Indrasamha*=Singapore:

The B. F. Goodrich Co.	*415,000	
Goodyear Tire & Rubber Co.	*270,000	
Henderson & Korn	*245,000	
L. Littlejohn & Co.	*194,964	
Robert Badenhop	*80,000	
J. T. Johnstone & Co.	*80,000	
Charles T. Wilson Co., Inc.	*67,000	
W. R. Grace & Co.	*22,500	
Arnold & Zeiss	*45,000	
Edward Maurer & Co., Inc.	*20,000	
Aldens' Successors, Ltd.	*45,000	
Hood Rubber Co.	*22,500	
Rubber Trading Co.	*4,000	
Fred Stern & Co.	*6,000	
Core & Herbert	*2,200	*1,519,164

SEPTEMBER 20.—By the *Orduna*=Liverpool:

Henderson & Korn		*6,000

SEPTEMBER 20.—By the *Kansas*=Colombo:

Meyer & Brown	*80,000	
General Rubber Co.	*70,000	
L. Littlejohn & Co.	*118,180	
Arnold & Zeiss	*90,000	
Various	*56,820	*415,000

SEPTEMBER 21.—By the *Minnehaha*=London:

Meyer & Brown	*75,000	
Goodyear Tire & Rubber Co.	*50,000	
General Rubber Co.	*115,000	
Aldens' Successors, Ltd.	*80,000	
Charles T. Wilson Co., Inc.	*90,000	
Robert Badenhop	*33,500	
Raw Products Co.	*7,000	
W. H. Stiles	*3,500	*454,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JULY, 1915.

	Pounds.	Value.
Exports:		
Balata	92,758	$37,504
Rubber scrap	199,821	29,249
Imports:		

PORT OF NEW YORK—AUGUST, 1915.

Balata	313,470	$118,793
Gutta percha	134,698	15,278
India rubber	16,286,888	8,140,861
Scrap rubber	249,797	25,994
	16,984,853	$8,300,926

PORT OF BOSTON—AUGUST, 1915.

Imports:		
India rubber	19,328	$7,789
Gutta Jelutong (Pontianak)	392,666	17,387
	411,994	$25,176
Exports:		
Rubber scrap	8,302	$1,097

PORT OF CHICAGO—AUGUST, 1915.

Imports:		
India rubber	78,043	$4,176

PORT OF CLEVELAND—AUGUST, 1915.

Imports:		
Rubber scrap	240	$12

PORT OF DETROIT—AUGUST, 1915.

Imports:		
Rubber scrap	33,098	$1,582
Exports:		
Rubber scrap	19,595	$927
Rubber reclaimed	47,508	3,591

PORT OF NEW ORLEANS—AUGUST, 1915.

Imports:		
India rubber	168,854	$69,989

PORT OF NIAGARA FALLS—AUGUST, 1915.

Imports:		
Rubber scrap	90,800	$590
Exports:		
India rubber	157,459	$88,056
Gutta percha	34,256	3,148
Rubber scrap	19,603	1,087

PORT OF PHILADELPHIA—AUGUST, 1915.

Exports:		
Rubber scrap	1,988	$325

PORT OF PORT HURON—AUGUST, 1915.

Imports:		
Rubber scrap	31,098	$1,553

PORT OF SAN FRANCISCO—AUGUST, 1915.

Imports:		
India rubber	142,221	$68,385

EXPORTS OF INDIA RUBBER FROM MANAOS DURING JULY, 1915.

EXPORTERS—	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Suter & Co. ..... *kilos*	67,189	6,772	17,620	84,849	176,430	46,766	2,080	.....	5,250	54,096	230,526
General Rubber of Brazil	62,662	14,435	21,592	28,517	127,206	93,836	18,948	656	190	113,630	240,836
Pralow & Co.	108,070	3,966	21,886	7,587	141,509	46,144	6,012	3,441	9,981	65,578	207,087
Tancredo Porto & Co.	21,230	4,267	1,610	154	27,261	46,756	11,689	7,888	5,548	71,881	99,142
Stowell & Sons	.....	.....	.....	.....	.....	9,157	699	1,759	17,779	29,394	29,394
Adelbert H. Alden, Ltd.	.....	.....	.....	.....	.....	15,636	2,153	2,401	379	20,569	20,569
Maxim Holdun	.....	.....	.....	.....	.....	.....	.....	.....	13,362	13,362	13,362
G. Fradelizi & Co.	.....	.....	1,415	979	2,394	5,304	1,021	24	.....	6,349	8,743
H. Balding	.....	.....	.....	.....	.....	8,577	.....	.....	.....	8,577	8,577
J. G. Araujo	3,319	174	996	.....	4,489	.....	80	440	.....	520	5,009
A. Souza & Co.	.....	.....	.....	.....	.....	2,000	.....	500	.....	2,500	2,500
Theodore Levy, Camille Co.	.....	.....	.....	.....	.....	150	100	960	140	1,350	1,350
Mesquita & Co.	.....	.....	.....	.....	.....	280	.....	280	.....	560	560
	262,470	29,614	65,119	122,086	479,289	274,606	42,782	18,349	52,629	388,366	867,655
Transit Iquitos	17,718	377	2,896	157,029	178,020	15,784	518	1,098	87,308	104,708	282,728
	280,188	29,991	68,015	279,115	657,309	290,390	43,300	19,447	139,937	493,074	1,150,383

EXPORTS OF INDIA RUBBER FROM MANAOS DURING AUGUST, 1915.

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Suter & Co. ..... *kilos*	53,163	2,801	8,135	13,476	77,575	10,400	.....	.....	.....	10,400	87,975
General Rubber Co. of Brazil	20,690	3,900	7,655	13,755	46,000	34,170	6,880	564	128	41,742	87,742
Pralow & Co.	84,654	6,487	9,995	38,790	139,926	29,487	2,581	4,674	3,115	39,857	179,783
Tancredo, Porto & Co.	2,744	2,019	162	.....	4,925	12,037	1,563	1,650	1,200	16,450	21,375
Stowell & Sons	.....	.....	.....	.....	.....	13,932	1,402	541	231	16,106	16,106
Moraes, Carneiro & Co.	4,827	.....	1,024	195	6,046	.....	.....	.....	.....	.....	6,046
Total	166,078	15,207	26,971	66,216	274,472	100,026	12,426	7,429	4,674	124,555	399,027

THE RUBBER SCRAP MARKET.

THE first two weeks of September witnessed a rather colorless rubber scrap market that reflected the dullness of the crude rubber position. Business was quiet in all grades of scrap and the only interest in evidence was centered in boots and shoes. There was an acknowledged scarcity of stocks and the mills came into the market for small lots in order to try out the claim of short supplies. Sales of boots and shoes were reported at 7¾ cents, and several large orders were reported at 7⅝ cents. The balance of the list exhibited little change worthy of record, and traders appeared to be waiting for the expected September buying movement.

During the last week of the month, the market developed a much stronger tone and boots and shoes advanced under good demand. Several lots were disposed of at 8⅛ cents and heavy buying was reported in one instance at 8 cents. Inquiries for trimmed arctics developed sales on a basis of 6½ to 6⅜ cents. However, actual buying appeared to be limited to certain mills. No. 1 white auto tires sold for 6⅞ cents under a good demand, while No. 2 were quoted at 6⅛. Auto tires mixed were easy at 5⅛, and stripped and unguaranteed tires were quoted at 3½ cents. There was little interest shown in the other grades and prices remained practically the same as a month ago.

NEW YORK QUOTATIONS FOR CARLOAD LOTS.
September 29, 1915.

	Per Pound.
Boots and shoes	$0.07⅞@0.08
Trimmed arctics	.06½@ .06⅝
White auto tires No. 1	.06⅞@ .07
No. 2	.06⅛@ .06¼
Auto tires, mixed	.05 @ .05⅛
stripped, unguaranteed	.03½@
Solid tires	.04¼@ .04⅜
Inner tubes, No. 1	.24 @ .25
No. 2	.11¼@ .11½
red	.12½@
Bicycle tires	.03 @ .03⅛
Irony tires	.01¼@ .02¼
Auto peelings, No. 1	.08½@ .09
No. 2	.06¾@ .07
White rubber, No. 1	.11 @ .12
No. 2	.09¼@ .09½
Red scrap, No. 1	.10 @ .10¼
No. 2	.07¼@ .07½
Mixed black scrap	.02½@ .02¾
Rubber car springs	.03¼@
Horse shoe pads	.03 @ .03¼
Matting and packing	.00½@ .00¾
Garden hose	.00¾@ .00⅞
Air brake hose	.05 @ .05¼
Cotton fire hose	.01¾@ .02
Large hose	.01 @ .01⅛

MARKET FOR COTTON AND OTHER FABRICS.

RAW cotton has advanced steadily during the month and prices have reached record figures. The upward movement is supported by active trading that has not been equalled since the outbreak of the war. The South seems to be in a favorable situation for handling the crop and the outlook for the southern planter is bright. It is predicted that cotton will sell for 15 cents by the first of the year.

SEA ISLAND COTTON.

The demand was sufficient, early in the month, to keep the Savannah market unchanged. Mills were bidding from one-half to a cent under quotations. During the third week Sea Island advanced under a general and active demand, and by September 25 sales of Floridas and Georgias were being made in Savannah and interior points at the following figures: Fancy, 23 cents; Extra choice, 22½ cents.

EGYPTIAN COTTON.

The latest news from Egypt is of an encouraging nature as decided improvement in crop conditions is noted in many districts. The new level of higher prices has been maintained with firmness, despite the unfavorable trade reports and heavy stocks on hand. Late in the month the Alexandria markets followed America's example by advancing. On September 23 the following prices were quoted: C. I. F. Boston, December shipment from Alexandria: Afifi, $19.00 to $22.25; Upper, $16.13 to $18.88; Nubari, $19.88 to $22.50; Sakelarides, $20.63 to $24.25.

FABRICS.

The cotton fabric market is advancing and prices are quoted with the understanding that new prices are being made every day.

The duck market is strong and heavy, buying orders are the cause of the rumor that mechanical ducks will be higher.

Tire fabrics are extremely active and a good volume of business is being done with the rubber mills.

The following are New York quotations on September 29, 1915:

Aeroplane and Balloon Fabrics:		
Wamsutta, S. A. I. L. No. 1, 40-inch	*yard*	$0.22
No. 4, 38½-inch		.22
O/X B. 36-inch		.10¾
Wool Stockinettes—52-inch:		
A—14-ounce	*yard*	1.12½
B—14-ounce		1.25
C—14-ounce		1.50
Cotton Stockinette—52-inch:		
D—14-ounce	*yards*	.46
E—11½-ounce		.36
F—14-ounce		.50
G— 8-ounce		.40
H—11-ounce		.45
I— 9-ounce		.37½
Colors—white, black, blue, brown.		
Tire Fabrics:		
17¼-ounce Sea Island, combed	*square yard*	.64
17¼-ounce Egyptian, combed		.54
17¼-ounce Egyptian, carded		.51
17¼-ounce Peelers, carded		.40
Sheetings:		
40-inch 2.35-yard	*yard*	.08½
40-inch 2.50-yard		.08
40-inch 2.70-yard		.07¾
40-inch 2.85-yard		.07
40-inch 3.15-yard		.06½
Osnaburgs:		
40-inch 2.25-yard	*yard*	.09⅜
40-inch 2.48-yard		.08½
37½-inch 2.42-yard		.07
Mechanical Ducks:		
Hose	*pound*	.23
Belting	.22½@	.23
Carriage Cloth Duck:		
38-inch 2.00-yard enameling duck	*yard*	.11
38-inch 1.74-yard		.12
72-inch 16.66-ounce		.25½
72-inch 17.21-ounce		.26½
Drills:		
38-inch 2.00-yard	*yard*	.10¾
40-inch 2.47-yard		.08¾
52-inch 1.90-yard		.12½
52-inch 1.95-yard		.11
60-inch 1.52-yard		.14
Yarns:		
Garden Hose 12/2 cabled	*pound*	.24
Fire Hose 12/1		.22
Imported Woolen Fabrics Specially Prepared for Rubberizing—Plain and Fancies:		
63-inch, 3¼ to 7½ ounces per square yard	*yard*	$0.38@1.55
36-inch, 2¾ to 5 ounces per square yard		.35@ .85
Plaid Linings:		
63-inch, 2 to 4 ounces per square yard	*yard*	.35@ .75
36-inch, 2 to 4 ounces per square yard		.20@ .45
Domestic Worsted Fabrics:		
36-inch, 4½ to 8 ounces per square yard	*yard*	.20@ .30
Burlaps:		
32—7½-ounce	100 *yards*	$5.15
40—7½-ounce		5.50
40—8-ounce		5.60
40—10-ounce		7.60
40—10½-ounce		7.75
45—7½-ounce		6.40
45—8-ounce		6.50
48—10-ounce		10.25

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

SEPTEMBER has been an extremely quiet month for the rubber chemical trade. Routine business has been normal and prices practically unchanged throughout the month. The rubber mills are apparently not inconvenienced to any great extent by the absence of German supplies.

The market for barytes has been quite steady and the scarcity of German grades has not affected the market, but has helped the consuming demand for domestic goods. The prices for pure white and off-color barytes have undergone no change since last month.

The market for chalk remains uncertain and forward shipments are extremely difficult to predict. Despite the difficulties in securing raw materials, the producers of whiting have not advanced prices.

Spot supplies of both domestic and foreign lithopone are difficult to obtain and domestic manufacturers appear to be sold up on contracts. The prices on both foreign and domestic grades are nominal. Zinc oxide continues to be in steady demand due to the regular call for deliveries on contract. New contracts are reported to have been made at higher prices, but the present list shows no change over last month. Zinc sulphide has advanced to 7½ cents.

Crimson antimony is to be had in limited quantities at prices varying from 80 to 85 cents per pound, while limited supplies of golden are quoted at from 60 to 70 cents—both quotations being nominal. Black hypo is only to be obtained in small lots and several dealers have reported that there was none to be had at the present time.

The pig lead market developed a strong tone during the closing week of the month and predictions of higher prices were heard. White lead, red lead and sublimed blue lead, however, have not changed in price since last month, in spite of the upward tendency of the raw material.

Dry colors have been in good demand and prices are holding firm at the unusual levels established by war conditions. Domestic production is not yet far enough advanced to affect the market. Soluble aniline oil colors have advanced to $2.50 per pound, showing an increase of 50 cents over last month.

The solvents have changed but little. The output of benzol is constantly increasing and notwithstanding the growing demand at home and abroad, the price is occasionally shaded from 85 cents to 80 cents a gallon.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS. NEW YORK, SEPTEMBER 29, 1915.

Acetone (drums)	lb.	$0.28	@$0.29
Acid, acetic, 28 per cent. (bbls.)	lb.	3.00	@ 3.15
glacial (carboys)	lb.	.15	@
Aluminum Flake (carloads)	ton	20.00	@22.00
Ammonium carbonate		None	
Antimony, crimson, sulphuret of (casks)		.80	@ .85
golden, sulphuret of (casks)	lb.	.60	@ .70
Asbestine	ton	19.00	@20.00
Asbestos	lb.	.04	@ .05
Asphaltum "G" Brilliant	lb.	.03	@
Barium sulphate, precipitated	ton	90.00	@100.00
Barytes, pure white	ton	16.00	@20.00
off color	ton	12.50	@14.00
Basofor	ton	105.00	@
Benzol, pure	gal.	.85	@ .90
Beta-Naphthol	lb.	2.00	@ 2.50
Black Hypo	lb.	None	
Blanc Fixe	lb.	.03	@ .03¼
Bone ash	lb.	.06½	@
black	lb.	.06½	@ .07
Cadmium tri-sulphate		None	
yellow		None	
Cantella gum	lb.	.27½	@ .35
Carbon, bisulphide (drums)	lb.	.10	@ .12
black (cases)	lb.	.07	@
tetrachloride (drums)	lb.	.18	@
Caustic soda, 76 per cent. (bbls.)	cwt.	5.00	@ 5.50
Chalk, precipitated, extra light	lb.	.04	@ .04½
China clay, domestic	ton	8.00	@ 9.00
imported	ton	16.00	@24.00
Chrome, green	lb.	.08	@ .10
yellow	lb.	.13	@ .14½
Cotton linters	lb.	.05	@ .08
Di-chlorethane (drums)	lb.	.12	@ .12½
Emarex	ton	70.00	@
Gas black	lb.	.06½	@ .07
Gilsonite	ton	37.50	@42.50
Glycerine, C. P. (drums)	lb.	.27	@ .30
Graphite, flake (250 to 400 pound bbl.)	lb.	.14	@
powdered (250 to 400 pound bbl.)	lb.	.14	@
Green oxide of chromium (casks)	lb.	.30	@ .35
Ground glass	lb.	.02½	@
Iron oxide, red, reduced grades	lb.	.02	@ .05
red, pure	lb.	.05	@ .08½
Infusorial earth, powdered	ton	50.00	@
bolted	ton	60.00	@
Ivory, black	lb.	.08	@ .12
Indian red	lb.	.02½	@ .05½
Lampblack	lb.	.04	@ .08
Lead, red oxide of	lb.	.06½	@ .06¾
sublimated blue	lb.	.05¾	@ .05¾
white, basic carbonate	lb.	.05¾	@
white, basic sulphate	lb.	.05½	@ .05¾
Lime, flour	lb.	.01	@ .01½
hydrated	lb.	.01	@ .02
Litharge	lb.	.07	@ .07½
English	lb.	None	
Lithopone, domestic	lb.	.06	@ .06½
imported	lb.	.08½	@
Magnesia, carbonate	lb.	.04¼	@ .05½
calcined, heavy	lb.	.30	@ .35
light	lb.	.20	@ .27
Magnesite, calcined, powdered	ton	30.00	@35.00
Mica, powdered	lb.	.03½	@ .05
Mineral rubber	lb.	.01¾	@ .04½
Naphtha, stove gasoline (steel bbls.)	gal.	.16	@
66@68 degrees	gal.	.20	@
68@70 degrees	gal.	.21	@
Oil, aniline	lb.	1.25	@ 1.35
corn, crude	lb.	.06	@ .06¼
linseed (bbl.)	gal.	.55	@
pine (cases)	gal.	.45	@
rosin, heavy body	gal.	.25	@ .55
tar (cases)	gal.	.24	@
soluble aniline colors, yellow, orange, red, violet, blue, green	lb.	2.50	@
Orange mineral, domestic	lb.	.10	@
Paragol	lb.	.063	@
Petroleum grease	lb.	.03½	@
Pine tar, retort	gal.	.14	@
Pitch, burgundy	lb.	.04	@ .05
pine	cwt.	1.75	@
Plaster of paris	lb.	1.50	@ 1.70
Prussian blue	lb.	1.10	@ 1.20
Pumice stone, powdered (bbls.)	lb.	.02	@ .03
Resin, Pontianak, refined	lb.	.14	@
granulated	lb.	.10	@
fused	lb.	.10	@
Rosin (280 and 500 pound bbls.)	lb.	3.70	@ 7.50
Rotten stone, powdered	lb.	.02½	@ .04
Rubber black	lb.	.02½	@ .03
Rubber flux	lb.	.05	@ .06
Rubber substitute, black	lb.	.06	@ .07½
white	lb.	.07½	@ .15
Shellac, fine orange	lb.	.22	@ .25
Soapstone, powdered	ton	10.00	@12.00
Starch, corn, powdered	lb.	.02½	@
Sulphur chloride (drums)	lb.	.06½	@ .07½
Sulphur, flowers	cwt.	2.20	@ 2.60
Sulphuric acid	lb.	.01½	@ .02
Talc, American	ton	8.50	@13.00
French	ton	18.00	@25.00
Toluol, pure	gal.	4.00	@ 4.50
Tripolite earth, powdered	ton	50.00	@
bolted	ton	60.00	@
Turpentine, pure gum spirits	gal.	.40	@ .41
wood	gal.	.38	@
Ultramarine, blue	lb.	.04	@ .22
Vermilion, brilliant	lb.	.90	@
Chinese	lb.	.95	@ 1.00
English	lb.	1.40	@ 1.50
Wax, bayberry	lb.	.22	@ .24
beeswax, white	lb.	.45	@ .60
ceresin, white	lb.	.14	@ .16
carnauba	lb.	.23	@ .40
ozokerite, refined white	lb.	.22	@ .25
montan	lb.	.22	¾ .24
paraffin, refined, 118/120 m. p. (cases)	lb.	.03¾	@
123/125 m. p. (cases)	lb.	.04	@
128/130 m. p. (cases)	lb.	.04¼	@
133/136 m. p. (cases)	lb.	.06	@
crude, white, 117/119 m. p. (bbls.)	lb.	.03½	@
yellow, 124/126 m. p. (bbls.)	lb.	.03½	@
Whiting, Alba, factory	ton	6.50	@ 7.50
commercial	cwt.	.50	@ .55
gilders	cwt.	.55	@ .65
Paris white, American	cwt.	.70	@ .75
English cliffstone	cwt.	.90	@ 1.25
Wood alcohol	gal.	.47	@
Yellow ochre	lb.	.01¾	@ .02
Zinc oxide, American process (factory) horse head.	lb.	.08¼	@
"special"	lb.	.07¾	@
"XX red"	lb.	.30¾	@
French process, green seal	lb.	.30½	@
red seal	lb.	.31½	@
white seal	lb.	.07	@ .07½
Zinc sulphide	lb.		

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Machinery.

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SPAIN AS A MARKET FOR AMERICAN RUBBER TIRES.

Spain can hardly boast the good roads that some other European countries have, nor is the general level of wealth in that country particularly high, but at the same time a good many automobiles are used there and the number is constantly increasing. And while hitherto the tires for these machines have been imported from neighboring countries, the present difficulty in the way of continuing these importations makes Spain rather an inviting field for the American manufacturer. The auto. tires hitherto principally used in Spain have been the Michelin and Le Gaulois, made in France, and the Prowodnik made in Russia. In addition, the Klein tire, manufactured in Spain, and the only tire of home manufacture, has been in considerable use. Some American tires, principally Goodrich, have also been sold. The preference for foreign tires is shown by the fact that the French, Russian and American tires have all commanded a price from 10 to 15 per cent. above that paid for the home-made brand.

There is no prejudice whatever in Spain against American tires, but it would be impossible for a manufacturer to get any foothold in that country unless he established an agency or branch office in Barcelona—which is the national center for the automobile trade—and then in addition had sub-agencies in several of the larger cities which could draw their supplies from the Barcelona store.

It would be necessary to have a selling force able to speak Spanish, or, at the least, French, a language with which the more pretentious business men are familiar. Then of course it would be necessary to do more or less pioneer work in order to make any headway against the brands already established in that country. The European tire makers resort to considerable general advertising, using the newspapers, bill-boards, theater curtains and the other means of reaching the public generally which are familiar to all large advertisers.

The tire size most generally used is 815 x 105 millimeters, corresponding closely to 32 x 4 inches. The Spanish tire, the Klein, retails in this size at $26.40 for a plain casing, and $7.40 for an inner tube. Other sizes sell at proportionate prices.

The Spanish customs duty on all pneumatic tires, including automobile tires, is 2.70 pestas (52 cents) per kilogram of net weight (2.2046 pounds). On solid tires, including tires for horse-drawn vehicles, these duties are 1.20 pesetas (23 cents) per kilogram of net weight.

Carriage tires of rubber are also extensively used in Spain, especially for such types of vehicles as broughams, Victorias, landaus and dog-carts.

AEROPLANES ARE IN DEMAND ABROAD.

During June and July of the present year Great Britain imported from the United States aeroplanes valued at $765,544. Italy imported aeroplanes worth $10,105, and Mexico imported $3,535 worth of flying machines during the same period.